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A CASE OF SO-CALLED OGUCHI'S DISEASE IN THE U.S.A.

BERTHA A. KLIEN, M.D.

Chicago

In 1908 Oguchi¹ described a peculiar congenital, stationary night blindness that is associated with a diffuse, grayish-white discoloration of the greater part of the eyegrounds. The white color disappears completely after occlusion of the eyes for several hours, a phenomenon which, after its discoverer, is called Mizuo's phenomenon. In Japan, 27 cases of Oguchi's disease were reported between 1908 and 1924.

The first certain case outside of Japan was reported by R. Scheerer² in Europe in 1927. Since then two reports have been added by Endelmann³ in 1931, one by Bein and Michniewicz⁴ in 1932, and one by Gangstrom⁵ in 1937. Two other cases are mentioned by Fleischer⁶ and Gianini,⁷ making a total of seven cases outside of Japan.

The following account of a case of Oguchi's disease appears to be the first reported in the United States of America, and in the English literature.

CASE REPORT

McC. E., a female, 44 years of age, American born, visited the Eye Clinic of Rush Medical College, complaining of night blindness, which she remembered as being of the same degree since early infancy. The patient knows of no other member of the family who is similarly afflicted. Her parents were of English and Hollandish extraction, and there was no history of consanguinity.

Ocular examination: The corrected

vision was R.E. 0.4, J 2 (+6.00 D. sph. \Rightarrow +1.00 D. cyl. ax. 25°); L.E. 0.8-3, J 1 (+4.75 D. sph. \Rightarrow + 1.25 D. cyl. ax. 150°). The external findings were normal, with the exception of a somewhat delayed dilatation of the pupils upon sudden reduction of illumination.

Fundi: In both fundi there was a wavy, yellowish-white discoloration, surrounding the discs and maculae, and most intense above and temporal from the maculae, extending well into the periphery (frontispiece), where a gradual transition into normal fundus with distinctly visible choroidal pattern could be observed. This opacity was situated underneath the retinal vessels, which appeared very distinct in all their finest branches against it. There was no pigmentary disturbance anywhere. After occlusion of the eyes for seven hours, this opacity had disappeared completely, leaving an entirely normal fundus.

The peripheral visual fields for form were normal. The central visual fields, taken on an average bright day, revealed a slight enlargement of the blindspots, greater in the right than in the left.

The color vision was tested with the Ishihara charts. The patient was found to be completely red-green blind, and was reading with difficulty also those charts that are easily recognized by the protanopic and deuteranopic, indicating a severe defect also in the blue-yellow perception.

The adaptation time, measured with

Feldman's adaptometer, was 57 minutes as compared to the normal three to five minutes.

The visual acuity was not influenced by the state of adaptation.

During a second occlusion test, the patient's fundi were observed once every hour, for four hours. During this time the progressive failing of the white areas could be stated from hour to hour, until after four hours of occlusion all the opacities excepting a group above and temporal to the maculae, where originally the densest discoloration had been, disappeared.

It was interesting to note, by means of special observation of a certain limited area of one of the fundi, that the white opacities reappeared in the same configuration which they occupied before the bleaching process.

General medical examination revealed no pathologic findings. The blood Wassermann test was negative.

The patient has five children, three boys and two girls. All three boys were found to be red-green blind, but had no anomaly of adaptation. Two of them had a high compound hyperopic astigmatism, as in the case of their mother; one had normal uncorrected vision. The two girls had a disturbance neither of adaptation nor of the color sense. The fundi of all five children were normal.

The combination of congenital, stationary night blindness with the above-described fundus findings, and the phenomenon of Mizuo justified the diagnosis of Oguchi's disease.

Reading the restricted literature on this subject, one finds a mixture of established facts and interesting theories.

The known facts so far are: (1) The disturbance of adaptation has no causal connection with the phenomenon of Mizuo; in other words, the degree of night blindness is not altered appreciably

by disappearance of the fundus lesions (R. Takagi and R. Kawakami⁸). (2) The visual acuity, the visual fields, and the color sense are usually normal in Oguchi's disease. Any combination with disturbances of these functions is incidental, and available statistics show that the disturbances lie within the average for occurrences of such manifestations in any group of eyes without Oguchi's disease. In only one of the 27 Japanese cases was there a disturbance of the color sense similar to that of this patient; several patients had high refractive errors with slightly defective vision. (3) The disease is hereditary, the heredity being recessive and not sex linked (Kawakami⁹). (4) Histologic examination of one eye with Oguchi's disease (Oguchi¹⁰) revealed an extensive portion of the retina temporal to the optic nerve with an abundance of cones, a scarcity of rods, and misplaced cone nuclei outside of the external limiting membrane, a distribution of visual cells that in human beings is normally limited to the macular area, but in the eyes of certain animals is physiologic. Thus, while not giving any information concerning the nature of the substance that undergoes the photochemical reaction in the phenomenon of Mizuo (alterations of the pigment epithelium as described by Oguchi¹⁰ and Yamanaka¹¹ are too vague for useful interpretation), the histologic findings at least confirm the assumption that this type of congenital, stationary night blindness is not a disease in the narrower pathologic anatomic sense, but a congenital anomaly, possibly of an atavistic nature.

The theories concern mainly the location of the pathologic process: (1) The pathologic process underlying the night blindness is probably localized in the outer parts of the rods. If it were in the pigment epithelium, as has been sug-

gested by some, the function of the cones could not be normal in the majority of cases, as their function also depends upon the integrity of the pigment epithelium. (2) The visible changes in the fundus could be caused by transformation by light of a substance accidentally present in the retina, perhaps also in the outer parts of the rods. The nature of this substance is unknown. This revers-

ible photochemical process, however, reminds one of another reversible, photochemical process in the retina, which, according to Hecht's physical-chemical theory, is the very essence of the process of adaptation, the substance undergoing this change during adaptation being identical with the visual purple.

1758 West Harrison Street.

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THE PRACTICAL USE OF HOMATROPINE-BENZEDRINE CYCLOPLEGIA*

A FURTHER REPORT

LYLE S. POWELL, M.D.

Lawrence, Kansas

Stimulated by the work of Myerson and Thau¹ and recent reports of Beach and McAdams² regarding the use of benzedrine sulphate (amphetamine sulphate) as an adjuvant in cycloplegia, a number of studies have been undertaken using some four adrenergic drugs—namely, adrenalin, benzedrine, ephedrine, and paredrine—in conjunction with homatropine for the production of practical cycloplegia in the refraction of young adults. The homatropine-benzedrine combination has seemed most satisfactory.^{3, 4, 5} It is felt that cycloplegia is necessary in the routine ophthalmological examination and refraction of the average young adult; necessary, of course, both that the refraction may be more accurately estimated and also that the interior of the eye may be more completely and more satisfactorily examined. While the orthodox homatropine cycloplegia has proved quite satisfactory from the standpoint of the eye physician, still from the standpoint of the patient some objections—discomfort, annoyance, and loss of time—are rightly offered. Certainly a cycloplegia as complete as the usual homatropine procedure but of much shorter duration and accompanied by correspondingly less discomfort and annoyance is desirable. In the case of students, business men, stenographers, and others of like vocations, the inability to do close work for a period of 18 to 24 hours may be a problem of major importance.

*From the Department of Ophthalmology, Osawatomie State Hospital. Presented before the American Academy of Ophthalmology and Otolaryngology, at Washington, D.C., in October, 1938.

MATERIAL AND METHOD

At the Osawatomie State Hospital physically sound, coöperative patients, both male and female, of all age groups, are readily available for study. Following the studies among these groups, collateral use of these cycloplegic procedures has been carried out in the author's private practice. In determining the state of cycloplegia the patients were refracted first by retinoscopy with fixation in the distance. This was compared with retinoscopic findings with fixation at 30 inches. Marked discrepancy in these findings indicate lack of complete cycloplegia. Next, the trial-case refraction for distance was determined, and with this before the patient accommodation was checked with the Prince rule. And finally, following the suggestion of Dr. Rutherford,⁶ the degree of cycloplegia was estimated by placing a plus 3.00 D. sphere before the distance correction and checking the far point at 33 centimeters.

The usual homatropine-cycloplegia procedure was first studied and calibrated. For this group 24 patients within the 16-to-31-year range were studied. The following observations were first made:

1. The size of the pupils in millimeters.
2. The reaction of the pupils to light and accommodation.
3. Distance vision as determined by the Snellen chart.
4. The ability to read Jaeger test type.
5. Accommodation as measured by the Prince rule.

Patients exhibiting any pathological variations from the normal were excluded. Homatropine hydrobromide aque-

ous 2-percent solution was instilled in each conjunctival sac at the outer canthus every five minutes until four instillations had been given. Observation of the above-named details were made at the half-hour, 1-hour, 2-hour, 4-hour, 8-hour, and 18-hour intervals. Complete practical cycloplegia occurred in the majority of cases one hour after instillation. A beginning recovery of accommodation was observed in about half the cases eight hours after instillation. Complete recovery of accommodation as judged by the ability to read Jaeger 1 type did not occur in the vast majority of instances until or after the 18-hour interval. The pupillary size increased an average of 4 mm., reaching its maximum one-half hour after the last instillation. Beginning diminution in the size of the pupil did not occur until the 8-hour interval and had not regained the normal size at the end of 18 hours.

In studying the benzedrine-homatropine-cycloplegia reaction, similar groups of both male and female patients were selected, ranging from 16 to 31 years of age. One hundred cases were studied. Various modifications of technique were used experimentally. Two instillations of homatropine of 2-percent solution were found to be more uniformly effective than one drop of a 5-percent solution. Likewise, two instillations of one drop each of the 1-percent benzedrine-sulfate ophthalmic solution produced a larger pupil and greater clearness of the cornea than a single administration.

The following technique was finally adopted as most suitable. Two drops of homatropine aqueous 2-percent solution were instilled in each conjunctival sac at the outer canthus 5 minutes apart, two instillations thus being given of 1 drop each. This was followed in 5 minutes by two similar instillations 5 minutes apart of 1-percent benzedrine-sulfate ophthalmic solution. Beginning recession of ac-

commodation was evident in one-half hour, and at the end of 60 minutes complete practical cycloplegia existed in 93 percent of the cases. A beginning return of accommodation was evidenced by the ability to read Jaeger type at the end of 4 hours in about 50 percent of the patients. At the end of 8 hours 75 percent of the patients were able to read Jaeger 1 type and at the end of 18 hours there was a complete return of normal accommodation in all of the patients as measured by the Prince rule and the ability to read Jaeger 1 type. One-half hour after the first instillation the pupil in all cases had reached its maximum dilatation. The average dilatation was 4.5 mm. A beginning return of the pupil to normal was evident in most cases at the end of 4 hours and was complete at the end of 18 hours, in all cases. It was noted that recovery of accommodation occurred before the normal pupillary size was finally attained.

The adrenergic action of the benzedrine seems to have a definite clarifying action on the cornea as well as increasing the dilatation of the pupil. Both these factors are definite aids in the use of the ophthalmoscope and retinoscope. While the homatropine-benzedrine method has been found eminently successful in young adults, it is believed that in children, whose amplitude of accommodation is so much greater, the "homatropine alone" or "atropine alone" procedure is to be preferred. As a general rule, children under school age are examined by the "atropine alone" method while in those of school age the "homatropine alone" method is used.

The action of miotics in bringing about a return of accommodation following benzedrine-homatropine cycloplegia has been studied in 24 cases and eserine solutions have been found the most effective.⁴ Eserine-salicylate solution, buffered to a pH of 6.2, making it isotonic with the

tears, has been used to advantage. To a similar group was administered benzedrine-homatropine cycloplegia under the conditions described above. One-and-one-half hours following the administration of the homatropine, 1 drop of 0.5-percent eserine-salicylate buffered solution was instilled in each conjunctival sac. Eserine-salicylate, 0.5-percent buffered solution, overcame this cycloplegia and brought about a practical return of accommodation one-half hour after its administration. This was followed by a moderate but definite diminution in accommodation. However, as the decline in the effect of eserine progressed, it was met by the natural recovery from the effect of the drugs, so that the cycloplegia was overcome in all cases $5\frac{1}{4}$ hours following the administration of the first drop of homatropine. The use of 1-percent buffered eserine-salicylate solution also brought about a complete return of accommodation one-half hour after its administration, but this stronger solution exhibited a more lasting effect so that at the end of $4\frac{1}{2}$ hours all patients were able to read J 1 type. No serious or untoward effects have been noted from the use of 0.5-percent buffered eserine solution, but in private practice a repeated dose of the 1-percent buffered eserine-salicylate solution caused one patient to have a violent attack of nausea and vomiting.

The following is the record of a graduate student in the Department of Physiology at the University of Kansas just recently examined. This man was arbitrarily chosen before examination as a case for presentation because of his understanding of the problem and his accurate observations. He proved to be an excellent case for demonstration. Several interesting points are noted:

(1) Loss of accommodation in 60 minutes. (2) Extreme dilatation of the pupil. (3) Beginning recovery of accommodation in four hours. (4) Progressive but still incomplete recovery of accommodation at the eighth hour. (As a general rule, younger persons exhibit a more rapid and complete recovery, due to their greater amplitude of accommodative power.) (5) The rapid return of accommodation following the administration of 1-percent buffered eserine-salicylate solution. (6) The return of accommodation in advance of pupillary recovery. (7) The "come and go" effect of the eserine on accommodation and pupillary size, in the struggle for supremacy of effect.

At the eighth hour eserine salicylate, 1-percent buffered solution, was administered and six minutes later this student could read J 1 type with the right eye, J 2 with the left eye. Fifteen minutes later, or 21 minutes after the eserine was adminis-

MR. J. P., AGED 31 YEARS

Refraction: O.D.—0.75 D. sph. ∞ —0.50 D. cyl. ax. 165°
O.S.—0.75 D. sph. ∞ —0.50 D. cyl. ax. 15°

		0 hr.	$\frac{1}{2}$ hr.	1 hr.	2 hr.	4 hr.	8 hr.**	8.06	8.21	8.41	10 hr.
Near point	O.D.	J 1	J 2	J 0	J 0	J 7	J 6	J 1	J 3	J 1	J 1
	O.S.	J 1	J 3	J 0	J 0	J 0	J 6	J 2	J 3	J 1	J 1
Far point	O.D.	10 D	2.25 D	0	0	2.50 D	3.50 D	4.75 D	10 D	10 D	10 D
	O.S.	9 D	2.50 D	0	0	2.00 D	3.50 D	4.25 D	10 D	10 D	10 D
Pupillary diameter	O.D.	*3.5	8	9	9	9	8	8	$1\frac{1}{2}$	3.5	3.5
	O.S.	*3.5	8	9	9	9	8	8	$1\frac{1}{2}$	3.5	

* Millimeters.

** Eserine 1 percent administered.

tered, the accommodation had advanced to the normal amount in each eye, although he was able to read only J 3. This seeming contradiction was probably due to the extreme contraction of the pupils and the confusion resulting from the conflict between the cycloplegia on the one hand, and the natural tendency to recovery tremendously stimulated by the eserine solution, on the other. Twenty minutes later the eyes had reached their normal state both as to accommodation and pupillary size, as well as the ability to read J 1 type. There were no subsequent variations.

SUMMARY

Homatropine and benzedrine in combination used according to the suggested procedure gave complete practical cycloplegia in a high percentage of patients at the end of one hour. The homatropine-only groups showed a more rapid onset and a longer duration of cycloplegia with a subsequent delay in the return of accommodation. In the homatropine-benzedrine group there was a beginning return of accommodation at the end of four hours as contrasted with the homatropine-alone group, which shows a beginning re-

turn of accommodation in some cases only at the end of eight hours. There was a tendency to greater dilatation of the pupil in the homatropine-benzedrine groups, and the cornea was definitely clearer in these groups than in the homatropine-only groups. One-half-of-1-percent buffered eserine-salicylate solution overcame the cycloplegia and brought about complete return of accommodation one-half hour after its administration. This action showed a definite tendency to wear off and was not so permanent or lasting as that observed following the administration of the 1-percent eserine-salicylate buffered solution.

CONCLUSIONS

Homatropine and benzedrine used in combination will produce in 60 minutes complete practical cycloplegia in a high percentage of patients between the ages of 16 and 31 years. Beginning recovery is evident in four hours. Eserine-salicylate solution, 1 percent and 0.5 percent buffered to be isotonic with tears, will overcome homatropine-benzedrine cycloplegia promptly and restore the power of accommodation within one-half hour.

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DISCUSSION

DR. C. W. RUTHERFORD, Indianapolis, Indiana: Studies have been made during the past year on the effects of benzedrine (amphetamine) and paredrine when added to homatropine for cycloplegia, and on the significance of variations in the location of the far point (Transac-

tions of the American Academy of Ophthalmology and Otolaryngology, 1937, pp. 188-189). Both eyes of 174 private patients, including a few young myopic persons, were examined.

The patients were studied in six groups (table 1). All eyes received pontocaine to

control blepharospasm, and then homatropine in amounts appropriate to the age of the individual patient. Aqueous benzedrine sulfate, one drop of a 1-percent solution, was added to one eye of each patient in group II and to both eyes of the patients of groups III and VI. Pare-

IV indicated that homatropine and pare-
drine were more strongly cycloplegic than homatropine alone, as in groups I and II; but group V, in which the effects of the two methods could be compared in the two eyes of each patient, indicated that neither was materially stronger than the other.

Eyes in groups I and II that had homatropine alone showed $12\frac{1}{4}$ percent of far points outside the accepted variable of 0.25 diopter, and eyes in groups II and III that had homatropine and benzedrine showed $11\frac{1}{2}$ percent outside. But of the eyes in group V, that had homatropine alone, all showed far points within the 0.25-D. variable, so it seemed unwise to discount the value of benzedrine without testing it again and with the more careful technique used in group V. Accordingly, group VI was studied.

Groups IV, V, and VI showed all far points within the 0.25-D. variable, a conspicuous improvement over what was found in preceding groups. This was due to an awakened conviction that human variables were responsible for diopter variations, and that greater care would be necessary in conducting future tests.

Close attention to the behavior of patients was rewarded with interesting and instructive revelations: (1) The test should be made leisurely. It is advantageous to watch the patient's lips; as soon

drine hydrobromide, one drop of a 1-percent solution, was added to both eyes in group IV and to one eye in group V. Group I, included for comparison, was tabulated from records made before the study was begun. Groups II to VI were consecutive.

No factors such as age, sex, occupation, character of ametropia, presbyopia, and so forth, were of value for predicting the probable location of the far point.

Percentages of far points are given in centimeters and diopters in table 2. Assuming that the test is a practical one and that a variation of 0.25 diopters from 33.3 cm. (between 30.7 and 36.4 cm.) is acceptably good refraction, then group

TABLE 1

	Men	Ages	Women	Ages
Group I	13	20 to 53	12	18 to 53
Group II	25	17 to 48	15	19 to 51
Group III	13	18 to 55	19	11 to 53
Group IV	14	13 to 57	18	17 to 60
Group V	10	20 to 59	15	18 to 58
Group VI	7	11 to 50	13	21 to 60
Totals	82	11 to 59	92	11 to 60

TABLE 2

	Pr. in cm.	28.6	29.6	30.7	32.0	33.3	34.6	36.4
	Pr. in D	.50	.37	.25	.12	.00	.12	.25
Group	Eyes	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Group I	HA 50	8	10	8	14	38	12	10
Group II	HA 40	0	5	20	$12\frac{1}{2}$	$32\frac{1}{2}$	$22\frac{1}{2}$	$7\frac{1}{2}$
	HB 40	10	5	$7\frac{1}{2}$	$17\frac{1}{2}$	$32\frac{1}{2}$	25	2
Group III	HB 64	3	$6\frac{1}{2}$	$23\frac{1}{2}$	17	$23\frac{1}{2}$	25	$1\frac{1}{2}$
Group IV	HP 64			$7\frac{1}{2}$	$18\frac{1}{2}$	25	39	$9\frac{1}{2}$
Group V	HP 25			12	8	12	64	4
	HA 25			4	16	4	64	12
Group VI	HB 40			5	25	$32\frac{1}{2}$	$32\frac{1}{2}$	5

HA—Homatropine alone.

HB—Benzedrine added.

HP—Paredrine added.

as they move, as though to speak, the test card is halted and then advanced very slowly until the designated word is read. (2) A daring patient attempts to read the word before it is clearly visible while a cautious one waits until sure of it. (3) Some persons can read words of square letters, like L E T, farther away than words of round letters, like C O D, while others can recognize round letters at the greater distance. Frequently a warning of this peculiarity will be detected while testing central acuity at six meters with letters of both forms in the same line, such as L C E O T D. (4) The test should be repeated until the operator is satisfied.

Conclusions: 1. The far-point test is a practical one. A variation of 0.25 D. from 33.3 cm. (between 30.7 and 36.4 cm.) is an expression of variability in human behavior of aptitude and it cannot be eliminated; there can be no uniform precise location of the far point. 2. Benzedrine and paredrine did not augment the degree of cycloplegia obtained with homatropine alone; both increased mydriasis, which was of no apparent advantage; both shortened the duration of accommodative disability, which was a welcome convenience to patients.

The solutions of benzedrine and paredrine were obligingly supplied by Smith, Kline and French Laboratories, Philadelphia.

DR. S. JUDD BEACH, Portland, Maine: It is very gratifying if the work that Dr. McAdams and I did in benzedrine and cycloplegics has been any factor in this very competent presentation by Dr. Powell. Continuing the work that was reported by us at the American Ophthalmological Society and the Academy last year, we are rather impressed with the notion that single instillations of our ordinary cycloplegics are much more effective than we have in the past been accustomed to

believe; and this is more or less consistent with the earlier use of cycloplegics, which, if you look back through the very beginnings of the literature, was to make single instillations of atropine. Now these single instillations of cycloplegics are so effective that it requires only a slight boost to make them sufficient for examinations of refraction, and this slight boost can be given in a number of different ways.

Our experience with these drugs rather leads us to believe that it makes no great difference whether you use the conventional method of repeating the instillation with the idea of getting cumulative action, or whether you use single instillations as Dr. Powell has described, reinforcing them with the adrenergic drugs. We are also rather inclined to think that it makes relatively little difference whether you use the 1-percent benzedrine or 1-percent paredrine or, as has been more recently recommended, paredrine in a 3-percent solution. Also it seems to produce a very similar result if you combine the solutions. It is perfectly possible, as we mentioned in our early reports, to use the cycloplegic and the adrenergic drug in the same solution in the manner in which cocaine and homatropine have been customarily combined.

The results of these investigations rather indicate that it is largely a matter of preferential use and the way in which they are used. At first we were firmly convinced that one drug was distinctly better than another, but after we compared the results in the same eyes at different times, using different drugs, we found that the variation which at one time indicated that one drug was better, might the next time show that the other drug was quite superior, and paradoxically enough, sometimes we found in the same patient that a 1-percent solution of paredrine, for instance, was apparently

more effective in the same combination with a cycloplegic than a 3-percent solution, and this has been more or less confirmed, I think by Tassman's experience with paredrine, which he recently published.

We have been inclined rather to make use of observations on a few intelligent and coöperative patients than to attempt to get mass figures.

I like very much Dr. Powell's phrase "complete practical cycloplegia," because the cycloplegia that we ordinarily get and that is quite satisfactory for purposes of refraction is, as he said, very remote from complete cycloplegia.

As we have previously stated, we still are convinced that the effectiveness of the combination depends largely on proper instillation of the cycloplegic. We have found it necessary to be particularly careful about the use of the adrenergic drugs, which seem to be quite effective. I think those who are using the strong solutions of adrenalin would probably agree with this. But a cycloplegic can very easily be flicked off or squeezed out of an eye and rendered almost inert. We still like our original routine, which has been to instill two drops of the cycloplegic and one drop of benzedrine or paredrine, whatever is preferred, and we still prefer 5-percent homatropine to the 2-percent. There are a number of theoretical reasons why this should be more effective, and we are rather inclined to the idea that it is.

The point where our experience diverges from that just reported by Dr. Powell is in the use of homatropine alone and atropine alone for children. I have no reliance whatever on homatropine alone used in the conventional way for children of school age, and in fact for any patients under 16 years of age; and, conversely, I feel that one of the greatest benefits and comforts to patients that I have had has been in the combining of

the adrenergic drugs with atropine for patients under 16 years of age. It is quite a comfort to be able to make one instillation of these combinations in the office and have them work inside of an hour, and in school children to be reasonably sure if this is done on Friday afternoon that they are going to be able to go back to school on Monday without any difficulty.

Our results still confirm us in the findings of our original experiments; namely, that we get within about a quarter of a diopter of as good relaxation as we have obtained in the past by the three-day performance of the instillation of atropine alone, and of course with much greater comfort to the patient and to the family, who do not have to make any instillations at home.

One thing about which I think it would be well to caution those who have never used this combination, is that benzedrine, and paredrine perhaps to a less degree, seem to dilate the tear duct very widely and very rapidly, so that in very rare instances—but often enough so that you should be on the watch for it—you get quite marked and prompt flushing of the face following the atropine instillation. This does not, however, follow if you use the adrenergic drug after having made both instillations of the cycloplegic. This may explain, possibly, the instance that Dr. Powell reported, in which he got nausea and vomiting following the use of eserine. Of course, if eserine is used after the tear passages are widely dilated, and the instillation is repeated a few times, a considerable amount is absorbed.

We can confirm the author's experience with regard to the use of eserine. Its application after the ordinary conventional use of homatropine is followed by very prompt apparent recovery from the cycloplegic, but the effect of the eserine soon wears off and the homatropine ac-

tion returns. In cases, however, in which the action of the eserine is maintained approximately as long as the action of the cycloplegic, quick recovery is maintained.

DR. WILLIAM CRISP, Denver, Colorado: Nowadays I practically never have any trouble from rapid absorption of the cycloplegic drugs. The reason is that I almost invariably insist that the patient shall have a meal a short time before I make the instillation. I called attention to that some years ago. If the patient has something in his stomach, you will hardly ever get disturbance from the use of atropine and homatropine, and you are much less likely to have disturbance from the use of hyoscine in moderately sensitive patients.

The combination that I personally have been using since I learned of the experiences of Doctors Beach and McAdams has been as follows: First of all, a 2-percent solution of cocaine; four minutes later a 1-percent solution of benzedrine or more recently (because the manufacturer seems to think that paredrine is a little better than benzedrine and is sending out the sample preferably of paredrine) 1 percent of paredrine; then four minutes later one drop of 5-percent homatropine. I am disposed to think that my experience has borne out Dr. Beach's statement that you get better results from one drop of the stronger solution of homatropine than from the two drops of the weaker solution. I used to use two drops, 2½ percent.

This combination, which I have found very satisfactory, after one hour, meets the objection that has been raised to the use of the paredrine before the homatropine; namely, that you shrink the passage and tend to carry off your drug too rapidly. With the proper method of instillation I do not believe this objection has any particular validity.

We also put the drugs in above the

cornea so that the film of solution at once spreads over the whole cornea. I believe that the presence of the film over the cornea is the most essential part of the procedure. I think any excess of the drug which you may put in will not have much chance of absorption anyhow, because it either flows down onto the cheek or goes into the lower culdesac and is rapidly taken care of by the nasal ducts.

I do believe that I gain materially as to the other two drugs by the preliminary instillation of the 2-percent solution of cocaine, because not only do I anesthetize the patient's eye as to sensitiveness to the next instillation, but I have the well-known further synergistic action of cocaine with the other drugs. My experience has quite borne out this line of argument. In fact, in some cases, even in young people, it seemed to me I had perhaps as perfect cycloplegia as was ever obtained, as indicated in both the near-point and far-point test. The use of the term "far-point test" seems rather confusing to me, and I prefer to say as indicated by the extremely prompt reaction of the patient to very slight changes in the sphere, even sometimes objecting to a slight reduction in the total amount of plus sphere which I have worked out because it was said that the vision was not so good.

As to the use of eserine, I usually use one in 240, or as it is made up, one grain of eserine sulphate or salicylate to a half ounce of distilled water, and I have repeatedly observed that the patient's condition the same evening is better than that the next morning. Dr. Beach rather jocularly said the patient has hardly got out of your office before the effect of the eserine has worn off. Usually that evening the patient gets along pretty well but the next morning he is pretty apt to relate to you that he doesn't get along as well as he did the night before. That is because

the effect of the eserine is diminishing very rapidly and the effect of the homatropine is still there to some extent

I think this technique is quite an addition to the convenience of carrying on our work, both as regards the patient and as regards the work that has to be done by the office assistants.

DR. I. S. TASSMAN, Philadelphia, Pennsylvania: I began the use of benzedrine sulphate in aqueous solution in addition to homatropine hydrobromide following the work of Dr. Beach, and in the same manner I completed quite a number of cases. The results that I obtained correspond very closely with the results that were reported by Dr. Beach.

I began in using benzedrine sulphate to use the same strength solution that Dr. Beach reported, a 5-percent solution, and then experimented in various ways, using weaker strength, including two drops of the 2-percent solution in the way that was described by the essayist this afternoon.

About a year and a half ago the effect of paredrine came to my notice, after research by two investigators at the University of Pennsylvania. I then substituted paredrine-hydrobromide aqueous solution for the benzedrine-sulphate solution, also trying various strengths, beginning with two drops of the 2-percent solution, one drop of the 4-percent solution, and again one drop of a 5-percent solution. In the case of neither benzedrine nor paredrine, were the results obtained so satisfactory with the two drops of a 2-percent solution as those obtained with the one drop of a 4-percent or a 5-percent solution. It did seem that the results with the one drop of a 4-percent solution were practically the same as those obtained with one drop of a 5-percent solution.

I feel, as Dr. Beach does, that the important thing is the accuracy in the instillation. Where only one drop of a drug is being instilled into the eye, it must be

made absolutely certain that the instillation is done properly so that the effect can be obtained. Certainly there is no objection to instilling the second drop, either of the cycloplegic or the paredrine, and almost routinely I have been using a second drop always of the paredrine solution.

Again I think that we ought to emphasize the need that was mentioned by Dr. Rutherford in accuracy in the subject of tests; that is, being absolutely certain the patient is coöperating and giving the examiner the proper answer, and is not in too much of a hurry to make a reply. I think that repeated questioning in this respect is absolutely essential in order to determine the accuracy of either the far point or the near point.

Again with regard to dilatation of the punctum, I found that this was not a complication with the use of paredrine, and that with the use of paredrine it makes no difference what drug is instilled before or after the use of homatropine or atropine.

As to children of school age, or below the age of 15 or 16 years, I found that it is satisfactory to use the one drop of 1-percent solution of atropine sulphate, followed in three or four minutes by a drop or two of 1-percent aqueous solution of the paredrine hydrobromide. The results obtained are practically the same as those that are obtained after the repeated instillation of atropine sulphate. As a matter of fact, I believe that we really make the numerous or repeated instillations in the ordinary way first of all because they are made at home, they are instilled by a parent who is not too adept in making an instillation even though careful directions have been given, and it is done principally to insure that at least a couple of drops are properly instilled.

Lastly, it is certain that if we have a

method that gives us in office practice a procedure that procures the same results with a rapid recovery, such as has been shown to take place in these cases, we have something that is an advance in our method of producing cycloplegia in refraction.

DR. LYLE S. POWELL, in closing: Mr. Chairman, I wish to thank the discussers. They have been very kind. I have only a few things I wish to say. The matter of paredrine has been injected into the discussion and I wish only to mention in passing that we have conducted parallel studies with paredrine. In calibrating these drugs with patients, however, we found that there was a slight but definite decrease in accommodation when used for mydriasis only.

We felt that inasmuch as benzedrine

and homatropine in combination were entirely competent in the production of practical cycloplegia, we would not report on paredrine at this time. We do think, however, that it is a valuable drug, but it is not in our opinion so valuable for use in mydriasis only, because we found a slight reduction in accommodation that we did not find with benzedrine.

I agree with a great many of the things that have been said about atropine, and I am forced to agree with the ones who use one drop. I think that is part of the art of the practice of medicine—one develops his own technique, and to me that is one of the nonessentials. The fact remains that to us, at least, this benzedrine and homatropine combination has resulted in a good, practical method of cycloplegia.

OCULAR PAPILLOMA

R. E. WINDHAM, M.D.
San Angelo, Texas

Papillomata of the eye seem rare enough and present so many interesting and perplexing features, that all cases with their most successful methods of treatment should be reported. One has but to search the literature and review the standard textbooks to appreciate the scarcity of published information, the limited number of reported cases, and the absence of a standard or accepted treatment.

The vast majority of papillomata reported have been on the caruncle and palpebral conjunctiva, but my report is limited to those appearing on the ocular conjunctiva and cornea.

The etiology is an unsettled question. Some ascribe these growths to trauma, as, for instance, an injury to the eye, or the result of foreign bodies such as sand and cement, or lime burns, and the removal of pterygiums.

I am convinced that adult papillomata are due to trauma from wind containing much dust and grit, for all cases seen were in a section where dust-laden wind is prevalent and occurred among people who spent most of their time out of doors exposed to the wind. Furthermore all cases were on developed or potential pterygiums, which are caused entirely by exposure.

For papilloma in the juvenile we must find some other cause. The absence of any history of trauma or irritation suggests that there may be a congenital predisposition, and the rapid recurrence of papilloma following repeated removals might suggest that these growths are locally infectious. The apparent contagiousness of

laryngeal papilloma and its infectious nature in animals might suggest a possible relationship to ocular papillomata.

Papillomata usually occur in one or other of two forms, diffuse papillomatosis, the villous mass with or without a pedicle, and the mushroom, cauliflower, or raspberry type. If the epithelial elements predominate, the papillae are closely packed and the growth is smooth. If the vascularized connective tissue is in evidence the tumor has more branching processes and represents the typical appearance of a papilloma.

The pedunculated type has to be distinguished from granuloma, tubercle, vernal conjunctivitis, and condyloma, while the sessile type must be distinguished from carcinoma, lymphangioma, vernal conjunctivitis, xerosis, epithelial plaques, and pterygium.

The limbus seems to be a common site for papillomata, because, as Fuchs says, it is the only part of the ocular conjunctiva that normally contains small papillae.

My experience does not confirm the usual textbook statement that locations of election are the plicae and caruncle, even though the caruncle is a veritable pathological emporium; neither does my experience indicate that malignant degeneration is very common. In spite of the many common ailments and tumorous growths of the conjunctiva, true papillomata are relatively rare.

This report includes only cases of ocular papillomata clinically diagnosed and confirmed by pathological examination. It includes eight cases that were cured and one that resulted in enucleation.

Dr. E. H. Cary¹ of Dallas, Texas, reported the case of a man aged 82 years. The condition was of one year's duration

* Presented before the American Academy of Ophthalmology and Otolaryngology, at Washington, D.C., in October, 1938.

and so extensive that a diagnosis of epithelioma was made and the eye enucleated. The pathological examination proved it to be only a simple papilloma.

Dr. Martha B. Lyon,² of South Bend, Indiana, reported the case of a child 5½ years of age. This tumor was of two years' duration and supposedly followed an injury. There were four recurrences.

Dr. Robert J. Masters in discussing this case reported the case of a girl, aged 20 years, treated and cured by repeated applications of the thermophore.

Freytag³ reviewed the literature, reporting 34 cases, 11 of which occurred at the limbus and 6 on the ocular conjunctiva.

Dr. William B. Dougherty⁴ of New York reviewed the literature and reported two cases. He stated, "In reviewing the literature, I was surprised indeed to learn of the number of cases of papilloma of the cornea and corneoscleral margin that presented both clinically and microscopically all the characteristics of these new growths and later developed malignant degeneration." In this respect I am more surprised than he, as none of my cases showed any malignant degeneration.

Dr. Julius Fejer,⁵ of Budapest, Hungary, reported a case of papilloma with diagnosis of an associated carcinoma due to a markedly atypical proliferation of the epithelium.

He states, "To establish a differential diagnosis between papilloma and carcinoma is often rather difficult, although the first never penetrates into the depth of the corneal tissue, has a cauliflower or raspberry appearance, and undergoes fungoid growth across the limbus without blending with the latter."

R. Beatson Hird⁶ of Birmingham, England, reported three cases: one, in 1913, involved the caruncle, and he was consulted because of a chronic discharge of the eye. The growth was removed surgically and its base cauterized.

In 1929, he was consulted, in the second case, by a boy of 14 years, because of a severe ocular hemorrhage. A large papilloma was removed from the inside of the lower lid. The third case was in a woman aged 39 years with papilloma in the lacrimal sac. She had had repeated operations during childhood.

Dr. W. C. Souter,⁷ of Aberdeen, Scotland, reported a case of diffuse papillomatosis in a plasterer, aged 49 years, terminating in a spontaneous cure. He reviewed the literature, analyzing 32 cases.

Dr. M. F. Weymann⁸ of Los Angeles, California, reported two cases, cured by the use of the Shahan thermophore.

The first pathological description of a papilloma was made by Gayet⁹ in 1879.

Practically all pathological reports define the growths as being chiefly of fibrous tissue with groups of squamous epithelial cells. Groups of large and small cells with some fibrous vascular tissue, and even those appearing at the limbus which receive their epithelial elements from the cornea, derive their vascular connective-tissue core from the conjunctiva.

CASE REPORTS

Case 1. Mrs. A., a ranch woman, aged 35 years, had noticed a growth on the nasal side of the left eye some eight months prior to consultation. It had grown rapidly since then, accompanied by some tingling and shooting pains, until it seemed to interfere with proper closure of the eye. The growth, 6 mm. by 10 mm., was removed and the base cauterized. It recurred in two weeks, when a cautery again was used and a cure secured.

Case 2. Mrs. M., aged 30 years, wife of a railroad man, had a growth, 10 mm. by 15 mm., on the nasal side of the right eye, of four months' duration. It was removed, cauterized, and cured in one treatment.

Case 3. Mr. S., aged 40 years, a railroad mechanic, presented a tumor of the con-

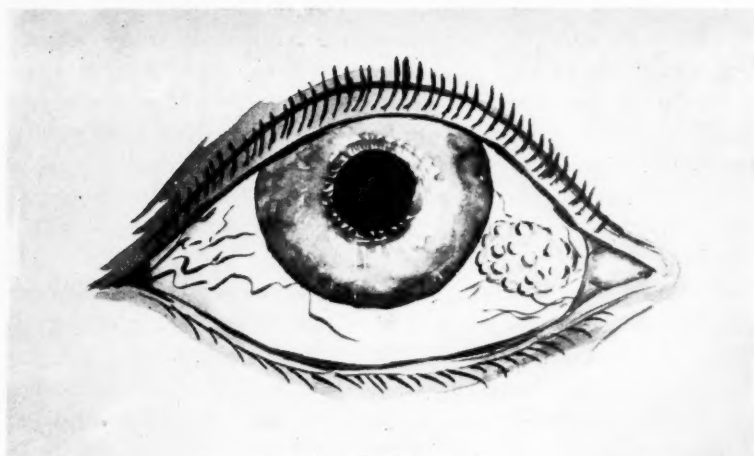


Fig. 1 (Windham). Case 2, right eye, nasal.

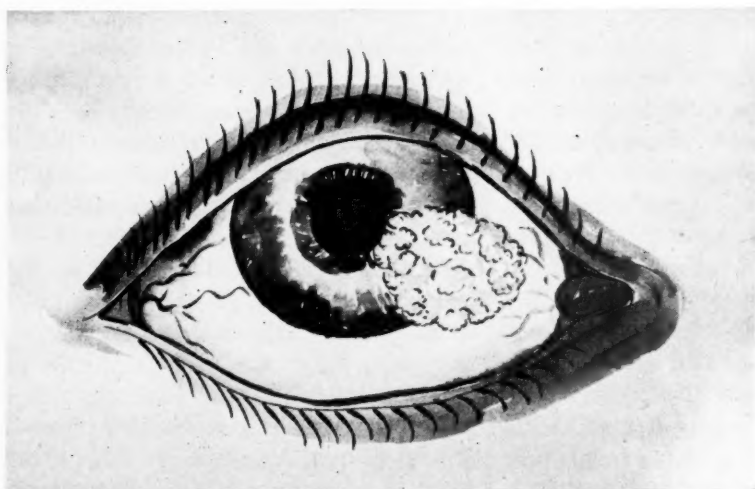


Fig. 2 (Windham). Case 4, right eye, nasal.

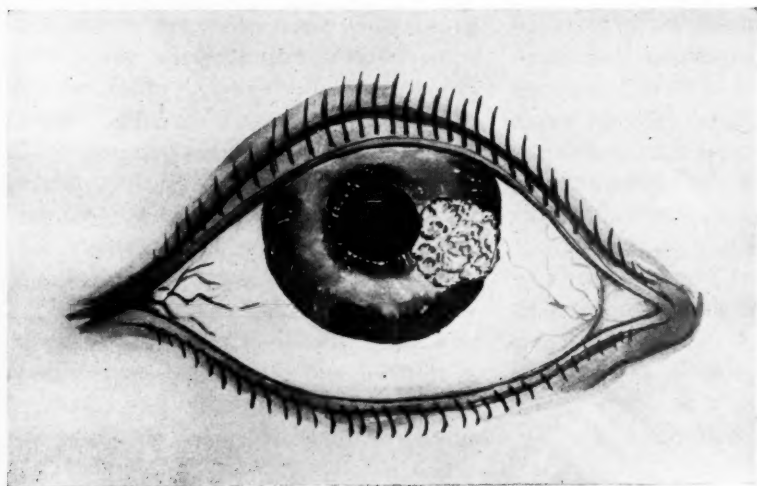


Fig. 3 (Windham). Case 5, right eye, nasal.

Fig. 4 (Windham). Case 6, right eye, temporal.

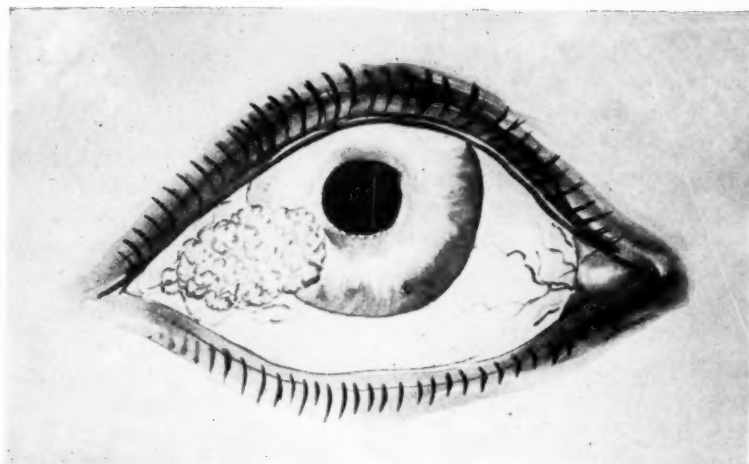
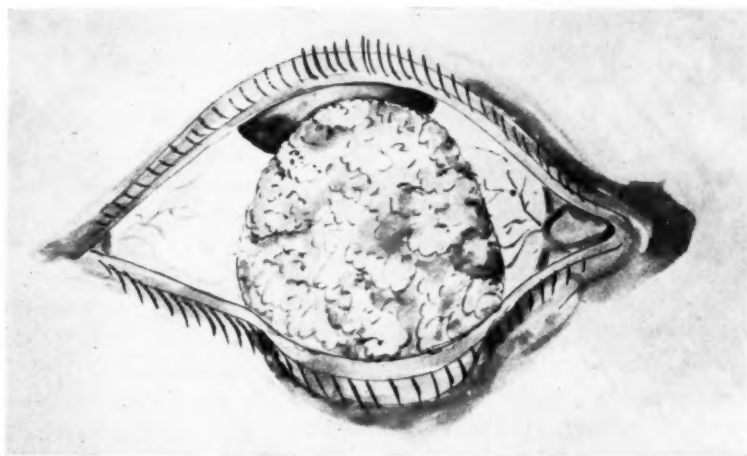


Fig. 5 (Windham). Case 6, right eye, below cornea.



junctiva on the temporal side of the left eye, 8 mm. by 12 mm., of three months' duration. It was cured by one application of the thermophore.

Case 4. Mr. P., aged 42 years, a ranchman, presented a tumor, 7 mm. by 9 mm., on the nasal side of the right eye at the limbus, the growth being of six months' duration. It was removed and the cautery applied. It recurred but was cured by application of the thermophore.

Case 5. Mr. W., aged 65 years, a ranchman, presented tumors of both eyes situated on the nasal sides of the corneas, which could be seen by the patient. The growths were of about seven months' du-

ration. The thermophore applied to each eye effected a cure with one treatment. The growths were about 5 mm. by 7 mm. in size.

Case 6. Mr. E., aged 65 years, a rancher-farmer, applied for treatment for a large conjunctivo-corneal growth on the temporal side of the right eye. He had been told by a doctor that it was cancer. The mass was extensive, fungoid or cauliflower in appearance, and of a distinctly grayish color, extending down to the sclera and through Bowman's membrane. With local and ciliary-ganglion block anesthesia, the mass was removed and the base cauterized. The growth reappeared

in the lower quadrant, was removed, and the base cauterized. Soon the tumor reappeared on the nasal side of the eye and was again removed with cauterization of the base. The patient was not seen for several months; then he returned with a very large mass in the lower quadrant, pushing the cornea completely beneath the upper lid. At this time an orbital evisceration was done, curing the papilloma but sacrificing the eye. In spite of repeated operations and office treatments, this case showed no evidence of malignant degeneration.

Case 7. Mr. P., aged 55 years, a traveling salesman, had a 5 mm. by 9 mm. growth on the nasal side of the right eye of one year's duration. A single application of the thermophore resulted in a cure.

Case 8. Mr. L., a farmer, aged 50 years, had a limbal growth, 6 mm. by 8 mm., of about nine months' duration, on the nasal side of the right eye. Thermophore application resulted in a cure in one treatment.

Case 9. Mr. M., a laborer. This case was picked up accidentally while making a routine examination in January, 1937. A small growth, pinhead in size, was detected in the conjunctiva on a well-developed pterygium on the nasal side of the left eye. This growth was diagnosed clinically as a papilloma and after explaining its significance to the patient, I agreed to remove it and the pterygium free of charge if he would let me observe its growth and study it. This he agreed to, and I considered it a unique and interesting privilege to watch a papilloma grow from infancy to large size. The growth was removed in May, 1938, approximately 17 months after its first detection and, at the time of its removal, had grown from 1 mm. to 8 mm. in diameter. It was removed by one application of the Shahan thermophore, following which the ptery-

gium was removed: to date there is no evidence of recurrence.

TREATMENT

Various types of treatments have been tried. Radiotherapy should not be used because it seems to stimulate activity. Also it affects normal vital tissue too severely and leaves the cornea with a denser vascularized cloudiness than before.

Careful resection of the papilloma and cautery of the denuded base will result in a fair number of cures. With the cautery one can control fairly accurately the degree of heat penetration, thus saving vital and uninvolved tissues.

Diathermy may be used but one cannot accurately control its extent or penetration in order to avoid unnecessary tissue destruction.

Even though Shahan (personal communication) does not especially recommend it for treatment of papilloma, the Shahan thermophore should be the method of choice, since papillomatous tissue in the eye melts away as if by magic at a temperature of 150° to 160°F., which is not sufficient to destroy normal tissue. With it one can melt away the growth, leaving normal, healthy, uncauterized tissue beneath and by careful, diligent application of one to two minutes, one may usually effect a cure with one treatment without scarring. Carcinomatous tissue will not melt away with this degree of heat.

SUMMARY

The etiological factor of papilloma is believed to be chronic irritation, as from dust-laden wind, for all ocular papillomata are in the palpebral opening on pterygium or potential pterygium, and those on the cornea are likewise in the palpebral fissure.

2. Any such growth showing intraocular extension—for example, into the anterior chamber—should be considered carcinomatous, as the progression of a papilloma is forward and not backward.

3. If papillomata are not due to irritation and exposure, no one has been able to explain why they occur only in the palpebral opening and not around the cornea.

4. Whether due to trauma or to an invisible filtrable virus, as has been suggested by Sir St. Clair Thomson, their tendency is to recur unless destroyed at the initial treatment.

5. Papillomata of the pedicled or loosely attached type are much more likely to be cured in the initial treatment, whereas the sessile type is less amenable to one treatment.

6. A case that shows no recurrence in the original area within one year should be considered cured; a recurrence after

one year in another area should be considered as having come from the same cause as the original papilloma. A malignant lesion appearing after one year should be considered as having no relation to the original papilloma. It is believed that these benign tumors do not become malignant; if malignancy is present, it has probably existed from the beginning and is not due to a change in the character of the papilloma.

7. A papilloma begins as a small tumor or nodule with a characteristic appearance, then bursts into a lobulated cauliflower mass, which grows rapidly for the first six or eight months. It then slows down into a rather sedentary cauliflower tumor of many lobulations with vascular-tissue proliferation.

8. Of the various types of treatment reported, the Shahan thermophore gives the best results.

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DISCUSSION

DR. R. J. MASTERS, Indianapolis, Indiana: Having accepted the assignment of opening the discussion of this paper, I was very promptly confronted by the realization that I was not at all sure that I knew what constitutes an ocular papilloma. Now, after careful study regarding this type of tumor, I cannot be sure that I have ever seen one, although I think that I have treated two of the sessile type. I have not encountered a papilloma of the lobulated, mulberry-shaped type, although it seems that this variety should offer less difficulty in its clinical diag-

nosis than the sessile type. Even in the microscopic section, a flat papilloma of the bulbar conjunctiva may be hard to distinguish from an epithelioma of low-grade malignancy. Clinically, several kinds of epibulbar tumors may look very much alike, and resemble a papilloma of the sessile type. To illustrate this point, I have chosen the following case histories for brief presentation.

Case 1. A white female, aged 16 months. A flat, smooth-surfaced, yellow-pink tumor of the bulbar conjunctiva of the left eye, extended from the semilunar

fold outward and upward and downward so that the entire nasal half of the conjunctival surface was affected. Two treatments with the Shahan thermophore were employed, under general anesthesia, two weeks apart. At the first treatment there were three one-minute overlapping applications of a large tip at 150°F., covering the upper half of the tumor. The second treatment was similarly applied to the lower half. The tumor disappeared and did not recur. Two other ophthalmologists agreed with my tentative diagnosis of unpigmented nevus in this case. Far too large for excision, the tumor was never examined under the microscope.

Case 2. A white male, aged 42 years, was examined one month after his left eyeball received a glancing blow by a pipe wrench. Two days after the injury, a blister appeared on the bulbar conjunctiva immediately adjacent to the temporal limbus. After seven days the blister had changed to a firm pinkish-gray, flat tumor of oval shape, measuring 6.5×5 mm. Dilated vessels entered it from above, below, and temporally. There was no infiltration of the cornea. The Shahan thermophore at 145°F. was applied for one minute. Two weeks later Dr. Shahan, visiting in Indianapolis, saw the tumor, which had reduced in size to 5×4 mm., and advised its excision. The pathologist reported that the sectioned tumor showed a small bit of squamous epithelium and granulation tissue overlying loosely organized connective tissue, with all of the underlying tissues presenting the features of a proliferative inflammatory process. This tumor was probably a granuloma, although its surface seemed to be fully and smoothly covered by epithelium. Small and firm as it was, it should have been excised in the first place. As the patient objected to excision the thermophore was used, which brought about some reduction in size of the tumor.

Case 3. A white male, aged 68 years. Six weeks following the subconjunctival injection of 10 minims of 1:6,000 cyanide-of-mercury solution in the upper temporal quadrant of the right globe, a small elevation was noted at the temporal limbus. This tumor measured 5×3 mm., was of a gray-pink color, and had a small white ulcerated patch upon its surface. It overlapped the limbus, but did not infiltrate the cornea. Engorged conjunctival vessels entered it. Three months passed before this tumor was again observed. It had overlapped the cornea still farther, without involvement of the corneal tissue, and there was no ulceration of its surface. The 7 mm. thermophore tip at 158°F. was applied twice for one minute, covering the tumor surface thoroughly. The tumor disappeared, leaving the eyeball of normal appearance 30 months later. Early ulceration of the surface of this tumor suggested epithelioma. Subsequent healing of this surface ulceration together with very slow growth and lack of corneal infiltration suggest the possibility of a more benign tumor which followed the injection of mercury solution under the conjunctiva.

Case 4. A white female, aged 19 years. Four months before coming for examination she had noticed a fleshy growth on the nasal aspect of the left globe. Later a second growth appeared on this eyeball, and two similar lesions on the right globe. Examination revealed two gray-pink sessile tumors in the right bulbar conjunctiva, extending upward and downward, respectively, from the semilunar fold. Upon the left eye were two similar growths in similar position, the upper one being pedunculated. The latter was excised, the other three treated successfully with the thermophore. There had been no recurrence 17 months later. Section of the excised growth led to a diagnosis by the pathologist of epithelioma of low-

grade malignancy. His detailed description, however, strongly suggested papilloma. There was a very vascular core, surrounded by a small amount of fibrous tissue containing many lymphocytes, with a covering of several layers of squamous epithelial cells which infiltrated the underlying structures at some points. This case was interesting and satisfactory, in that one growth was available for section while the others responded to thermophore therapy. The cause of the condition was subject to conjecture, but the patient had used mascara on her eyelashes in profuse amounts for many months.

I am glad that the essayist has again directed our attention to the use of the Shahan thermophore in the treatment of some epibulbar tumors. Soft flat growths that are not thicker than 1 mm. and that involve a large area of the bulbar conjunctiva, may be given a therapeutic test with the thermophore. Firm growths and those of moderate size should be excised. Papillomata that arise at the limbus, whether the type that grows outward from the surface, or the kind that invades the corneal substance, should preferably be excised. This applies probably to all of the pedunculated papillomata. There are, however, occasions when surgery is strongly resisted by the patient and another type of treatment is desired. The essayist has therefore performed a service to us by recounting his encouraging experiences with the thermophore in his large group of cases of papilloma of the bulbar conjunctiva. My less extensive experience supports his conclusions regarding the value of the instrument.

DR. WILEY R. BUFFINGTON, New Orleans, Louisiana: In the first place it must be conceded from statistical data that malignant or recurring ocular papilloma is relatively rare, in spite of the fact that Shumway, before the Section on

Ophthalmology, A.M.A., 1903, stated that it is a common type of conjunctival tumor. Elschnig as early as 1889 said that they are rare. A review of data from six German authorities during the period from 1884 to 1899 suggests that papilloma is rather common.

To determine the exact frequency, careful clinical diagnoses should be made; more important still, precise histological study. In a review of many case reports, I am inclined to think the latter has not always been thoroughly done. Granuloma arising over the site of ocular muscle operations has been classified by one textbook under the papilloma group; yet, these tumorlike formations are made up of inflammatory tissue. They do not recur after excision.

The case reports so well given by Dr. Windham show that recurring or malignant papilloma is far more frequent in southwest Texas than it is in Louisiana. In that section the climate is dry, the wind is heavily laden with dust and sand; in Louisiana, moisture free from dust fills the atmosphere. It would seem that conjunctival irritation from exposure of such substances is a most important etiological factor.

My statistical reports show that recurring papilloma is extremely rare in Louisiana. From 1922 to 1937, 14,686 eye patients were admitted to Charity Hospital for operations on the eye. Among these only 11 were authentic cases of ocular papilloma. In my private series only three cases are found among upward of 25,000 patients. These facts would suggest that climatic conditions may account for the relative infrequency of conjunctival papilloma.

True malignant recurring papilloma must be distinguished from other ocular conjunctival growths, hyperplasias, and conditions. Dr. Windham has named most of these. Papilloma has certain character-

istics that distinguish it from other ocular conjunctival tumors:

1. Papilloma is a small flat tumor.
2. It has an uneven or velvety surface due to the fact that it is covered by minute elevations. It is composed of branching papillae of connective tissue, surrounded by a thick layer of stratified epithelial cells. The thin-walled blood vessels often resemble endothelial tubes.
3. Conjunctival papilloma invariably recurs unless properly treated. In some cases it recurs again and again in spite of the most efficient treatment.
4. True papilloma never metastasizes.
5. It may undergo malignant or carcinomatous degeneration.

"The regular disposition of the cells, the intact basement membrane, and the delicate fibro-vascular case help to indicate the difference between papilloma and carcinoma" (Souter). The demarcation between malignancy and nonmalignancy is not always easy to determine. Breaks in the basement membrane, invasion of tumor cells, suggest malignancy. Coover's case (*Amer. Jour. Ophth.*, 1920, v. 3, p. 683) is worth referring to (see fig. 1).

This papilloma occurred in a scar at the temporal limbus in 1903. It was removed. The pathologic report was papilloma. In 1913 there was recurrence of a massive growth which was removed. Report was pathologic basal-cell epithelioma.

Gourfein (*Review gen. d'Ophth.*, 1927, v. 42, p. 5) reports a case of epibulbar papilloma arising from a limbal scar.

Diagnosis: Papilloma undergoing carcinomatous changes. Pascheff (*Royal London Ophth. Rep.*, 1905, v. 16) states:

1. Primary limbal papilloma is rare.
2. It may develop quickly.
3. It recurs frequently after operation. Recurrence may occur in a few days or be delayed more than two years.
4. It often undergoes malignant degeneration.

Terrein and Cousin (*Arch. d'Ophth.*,

1931, v. 48, p. 622) discuss the close relation between limbal papilloma and carcinoma. In their opinion, papilloma may be the transition state of malignancy.

Preponderance of evidence from many other authorities confirms the reports and opinions of those just quoted.

Treatment: From a clinical standpoint, prompt and effective treatment is important to prevent recurrence and to forestall malignant degeneration.

Complete removal is not sufficient in the successful treatment of the conjunctival papilloma involving the cornea. After removal the denuded area must be treated by some cauterizing agent. Recurrence may take place in the original site. Usually, however, if the tumors are astride the limbus the recurrence is an extension above or below. Frequent observation of the lesion is important. With the first sign of recurrence, prompt treatment must be instituted. This may be once, twice, or many times. Removal and cauterization are more effective in the treatment of papilloma than irradiation, or even combined removal and irradiation. The cauterizing agent may be the electric cautery, the thermophore, or a chemical such as glacial trichloroacetic acid. In my hands the latter has been the most efficient. It can be used with great frequency with minimum permanent damage to the cornea and sclera.

CASE REPORTS—OCULAR PAPILOMA

Case 1. On June 14, 1932, Mr. F. T. L., who was 44 years of age, white, presented a recurring growth on the conjunctiva and limbus of the left eye. It had been removed four times since August, 1931, the last operation having been performed on May 1, 1932. Examination of the left eye revealed two flat vascularized tumors involving the conjunctiva and cornea (fig. 1). X-ray and radium treatments had been applied by Dr. V. from June to December, 1932. On December 15, 1932, the

tumors in spite of X-ray and radium treatment, had grown steadily and became confluent at the temporal limbus (fig. 2). On December 17, 1932, the tumors were removed under local anesthesia. They were found to be attached to both the sclera and the cornea. The denuded surfaces were treated with electric cautery, and the area covered with a sliding conjunctival flap. Two small recurrences at the upper limbus were removed and cauterized on May 18, 1933. On May 24, 1933, a 5-mm. round, flat tumor astride the upper limbus had returned.

It was removed and the surface was treated with electric cautery. On January 8, 1935, recurrence of the growth along the temporal limbus was noted. This time it involved half the temporal limbus (fig. 3). Recurrence was noted by the patient in one week. On January 22, 1935, I completely excised the papillomatous growth. The attachment of this recurrence was at the limbus. The tumor overlapped the cornea. The whole denuded surface was then touched with glacial trichloroacetic acid. The clinical diagnosis was recurring papilloma of the conjunctiva and cornea, and the pathologist's report was papilloma, suggestive of undergoing a squamous-cell carcinomatous degeneration. To date there is no recurrence. Vision of both eyes is 20/20, or normal (fig. 4).

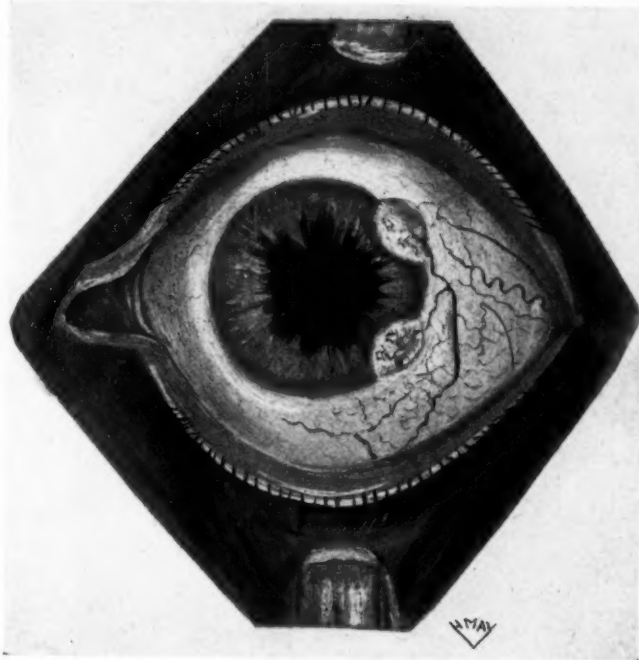


Fig. 1 (Buffington).

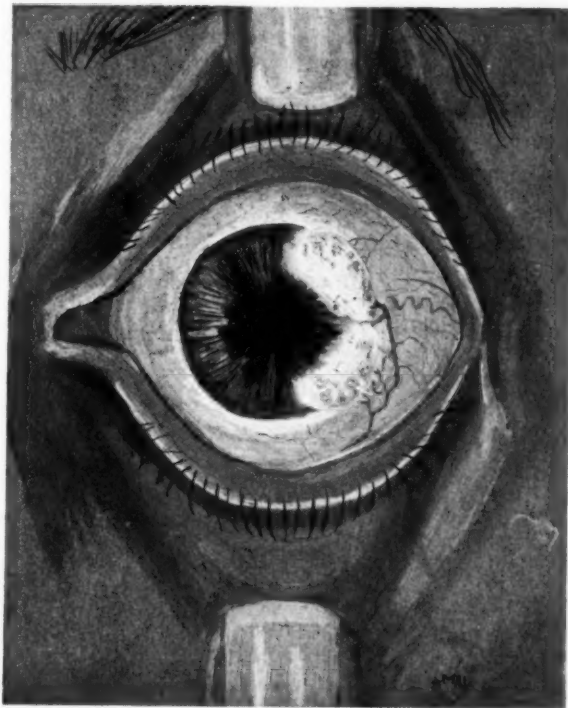


Fig. 2 (Buffington).



Fig. 3, top; Fig. 4, bottom (Buffington)

Case 2. On January 17, 1936, Mrs. G. A., who was 58 years of age, white, was seen with a growth on the right cornea, pin-head in size, first noticed about six months previous to this date. Prior to the appearance of the growth, the eye was red. The growth doubled in size in three months. The tumor was flat, vascularized, overlapping the cornea about 2 mm. There were prolongations along the limbus downward. The tumor was loosely attached to the conjunctiva and cornea (fig. 5). It was removed, and the base touched with glacial trichloracetic acid. Clinical diagnosis was papilloma of the conjunctiva and cornea; pathologic diagnosis was papilloma, no malignancy. A recurrence of the papilloma was noticed on October 15, 1936, extending from the 5 to 9-o'clock position along the limbus. It was removed and the whole area touched with trichloracetic acid. On May 5, 1937, a recurrent, flat, 4-mm. papilloma came at the lower limbus. A smaller recurrence was noted at the upper limbus. Both were treated by excision and trichloracetic acid. There has been no recurrence to date. Vision, October 1, 1938: right eye, 20/40, left eye, 20/20.

Case 3. Mrs. A. C. C., aged 29 years, white, was seen on November 11, 1936, because of a growth on the right eye of four months' duration. A 5-mm., round, circumscribed tumor of the conjunctiva was situated nasal to the limbus. The surface was rough, and leading into the mass were several large blood

vessels. A diagnosis was made of papilloma of the conjunctiva. The tumor was removed, and the denuded area touched with glacial trichloroacetic acid, and then covered with conjunctiva. The pathological report was squamous-cell carcinoma. There has been no recurrence.

DR. EDWARD STIEREN, Pittsburgh, Pennsylvania, illustrated with lantern slides a huge cauliflower growth of the right bulbus in a male, aged 45 years. Arising over the external rectus by a strong pedicle, it took on a mushroom shape, and was 12 mm. in length, 8 mm. in width, and about 10 mm. high. It reached to the external canthus, overlapped the cornea to its center, and projected forward between the lids, which could not be closed over it. The surrounding conjunctiva was inflamed and thickened and there was considerable ropy discharge. The color and general appearance of the mass was that of a pale red raspberry. There was no involvement of the preauricular or any of the lymphatic glands. According to the patient's statement the lesion was first noticed about a year previously as a localized inflammation with a slight elevation.

The growth was excised and the defect covered with a sliding conjunctival flap. At only one point, over the insertion of the external rectus, was it adherent to the globe. Healing was prompt and unevent-



Fig. 5 (Buffington).

ful. The specimen was pronounced to be an epithelioma of papillomatous type or a papilloma taking on epitheliomatous changes. He was given X-ray exposures at intervals over a period of six weeks and when seen a year later the entire conjunctiva was smooth and glistening with no semblance of a recurrence.

DR. NORMAN W. PRICE, Niagara Falls, New York: Mr. R. J. came to my office August 12, 1937, with a growth at the 9-o'clock position at the limbus of his left eye. This was a flat growth extending a short distance over the cornea. With a cataract knife I removed the growth, which was only slightly raised and contained no pedicle. It was sent to the laboratory at Memorial Hospital, Niagara Falls, and also to Gratwick Laboratory,

Buffalo. They reported the growth a papilloma.

The patient returned in two weeks with a growth quite as large as the one before. I then took him to the Gratwick Cancer Laboratory, where they tried to remove the growth with an electric cautery on different occasions, but it returned soon after each treatment. On November 10, 1937, the growth was very much in evidence.

On March 7, 1938, at the hospital, I removed the growth thoroughly with a knife and cauterized the base with trichloroacetic acid, covering the area with a conjunctival flap. Another biopsy at this time showed a papilloma.

A month later the growth was quite as large as ever, and as Gratwick refused to use radium I did a thorough job of cauterizing, burning the tissues, all I thought the eye could stand, and again covering with conjunctiva. Since then there has been no recurrence. Vision corrected is 20/30.

DR. LAWRENCE T. POST, Saint Louis, Missouri: I wish to express agreement with the essayist in the value of the thermophore in the treatment of tumors of the type described. In our office we have been using the thermophore in these cases, and also in the clinic at Washington University for the past 20 years. We have had excellent success and have had very few recurrences. I believe the reason one has fewer recurrences in treating with the thermophore is because heat from the thermophore penetrates farther than in other types of cauterization, though, as the essayist said, penetration probably is limited to about $1\frac{1}{2}$ mm.

I would take exception to his statement about malignant growths. We have found that they were equally successfully treated by the thermophore. We find that depending upon the condition of the tissue with regard to its relationship to scar

tissue, it tends to be unsuccessful. The softer, the newer the growth the more successful is the thermophore application.

About three years ago an essay or thesis before the American Ophthalmological Society pointed out that the degree of heat did not register accurately in a series of thermophores that the author tested. Dr. Shahan recently has gone over this and found that statement to be correct. He has recently devised a new thermophore that is far more accurate. I think that a number of failures in thermophore therapy in its various applications may have been due to the inaccuracy of the thermometer in the instrument. It is possible to standardize your own thermophore by utilizing the fact that the melting points of drugs are relatively critical, within the matter of a degree or more. For example, the melting point of trional is given as 168.8°F . If you place a few crystals on the contact surface of your thermophore and set it for that temperature, you will find that though melting point and recrystallization are within one or two degrees, it may not read 168.8° on your thermophore. Therefore with such a method—there are other drugs for other temperatures—you can determine with fair accuracy the error in your own thermophore. We hope that the new one will be far more accurate.

I congratulate the essayist on the success that he has had. I might say that the temperature we have used is 150 degrees for one minute, remembering always that it is necessary to make continual contact during that minute.

DR. R. E. WINDHAM, in closing: I wish to express my deep appreciation to all the discussers for the very interesting and, to me, enlightening remarks that they have made.

I first used the thermophore on these growths experimentally. I had a case of one of the smaller groups, I think it was

the third case I had, and used the thermophore merely to see what would happen. I used a tip larger than the growth and held it for one minute by the watch, raised

my tip to see what had happened to the tumor and found I didn't have a vestige of it left. I thought I had found something. Thank you very much.

RETINAL HEMORRHAGES AFTER TRANSFUSION

RAYMOND J. GRAY, M.D.

Pittsburgh, Pennsylvania

Numerous complications of blood transfusion are described in the literature. Among these are the ocular complications, especially retinal hemorrhages, which form a group that is uncommon and least understood but which are in need of further investigation to determine their true relationship.

The possibility that retinal hemorrhages may occur as a complication of blood transfusion was first mentioned by Sallmann in 1925. The purpose of substantiating this possibility, and its frequency as well, formed the basis for a review of the literature and for the following observations, which were made in the Department of Ophthalmology at the Cincinnati General Hospital. None of the cases was selected and all were examined only as my colleagues on various services, coöperating with me, provided the opportunity to examine the fundi prior to the transfusion. Fundus examinations, therefore, were made before and 24 hours after. In cases of multiple transfusions, repeat examinations were made every 48 to 72 hours. Thus, accurate data could be compiled as to the presence of retinal hemorrhages before, and any appearance or increase after. Special note was also made of their extent, number, location, and if strictly retinal or preretinal. Eighty-five cases totalling 343 transfusions comprised the series studied. Individual cases received from 1 to 17 transfusions and of the total of 85, 69 received two or more.

In all, there were 44 different diagnoses but only one primary anemia; however, 68 cases were complicated by some degree of secondary anemia which would be expected in any transfusion series. Table 1 indicates the different diagnoses and number of each.

In the entire group, retinal hemorrhages were present in six cases prior to the first transfusion. Only one of this subgroup showed an increase in their number and size after transfusion. The only other positive case was one in which the retinae were normal at the time of the initial examination but in which bilateral preretinal hemorrhages obscuring the macula followed the transfusion. The significant details of both cases are herewith presented.

CASE REPORTS

Case 1. A white male, aged 58 years, had a final diagnosis of nontropical sprue.

On May 9, 1938, the blood count showed: erythrocytes, 890,000; hemoglobin, 28 percent. The blood pressure was 105/60.

Ophthalmoscopic examination: The discs and margins were of normal color; the maculae also were normal. There was marked vascular sclerosis. A few flame-shaped peripapillary hemorrhages (bilateral) were found; round, old and new, preretinal hemorrhages, about $1\frac{1}{4}$ disc diameters in size; two in the right and three in the left eye.

A transfusion of 250 c.c. of citrated

blood was given without reaction; patient was of type 2, the donor, type 4.

On May 10, 1938, the blood count

TABLE 1
PATHOLOGIES FOR WHICH TRANSFUSIONS
WERE GIVEN

Diagnoses	No. of Cases
Chronic osteomyelitis with anemia	7
Appendicitis with peritonitis	6
Traumatic shock	6
Incomplete abortion	5
Tubo-ovarian abscess	4
Thermal burns	4
Duodenal ulcer with anemia	5
Cholecystitis	3
Meningitis (pneumococcic)	3
Postpneumonic empyema	2
Chronic nephritis with anemia	2
Intestinal obstruction	2
Diabetes mellitus with anemia	2
Syphilis with arsenical dermatitis	2
Carcinoma of	
oesophagus	3
stomach	1
cecum	1
colon	1
rectum	2
breast	1
lung	1
pancreas	1
Compound fracture with gas gangrene	1
Prostatic hypertrophy	1
Postpartum hemorrhage	1
Pernicious anemia	1
Pyonephrosis with anemia	1
Perirenal abscess	1
Pyarthrosis	1
Pregnancy with pyelitis	1
Rupture of spleen	1
Spinal-cord tumor	1
Brain tumor	1
Pituitary tumor	1
Intracranial aneurysm	1
Pneumonia	1
Pemphigus	1
Pulmonary tuberculosis	1
Rheumatic heart disease with anemia	1
Orbital cellulitis	1
Little's disease	1
Carbuncle of cervical region	1
Urethral stricture with urinary extravasation	1
Uterine fibroids	1
Nontropical sprue	1
Total	85

showed erythrocytes, 1,030,000; hemoglobin, 33 percent. The ophthalmoscopic examinations revealed no change from the previous day.

A transfusion of 500 c.c. of citrated blood was received without reaction by

the patient; the donor, type 2. On the following day (May 11, 1938) there was a rise of temperature to 103 degrees, explained by the attending clinician as due to the transfusion of the previous day. The patient complained of blurred vision. His blood count was—erythrocytes, 1,250,000; hemoglobin, 35 percent.

Ophthalmoscopic examinations revealed an increase in the number and size of the preretinal hemorrhages with a fresh one, 1 disc diameter in size, obscuring the macula of the right eye, and a fresh one, 2½ disc diameters in size, obscuring the macula of the left.

On May 15, 1938, the vision (with glasses) was O.D. 20/200; O.S. ability to count fingers at 1 foot. On May 27, 1938, vision was O.D. 20/70; O.S. 10/200.

Ophthalmoscopic examinations showed the hemorrhages to be darker in color and absorbing; the right macular hemorrhage was 0.1 disc diameters in size; left, about 0.8 of a disc diameter.

On June 29, 1938, the vision was O.D. 20/40; O.S. 20/200; three months later (September 30, 1938) it was O.D. 20/20; O.S. 20/30.

Ophthalmoscopic examinations then showed the hemorrhages in the retina of the right eye to have been entirely absorbed, leaving the macula normal. The hemorrhages in the left eye had also been absorbed, but the macular area showed a grayish area about 0.25 of a disc diameter in size, surrounded by a dark-brown halo.

Case 2. A white male, aged 26 years, was given a final diagnosis of bleeding duodenal ulcer.

On December 2, 1937, the blood count showed erythrocytes, 1,450,000, and hemoglobin, 25 percent. The blood pressure was 100/65.

An ophthalmoscopic examination disclosed normal discs and maculae, vessels showing no recognizable degree of

sclerosis, and no hemorrhages nor exudates.

A transfusion of 550 c.c. of citrated blood was given, patient and donor both being type 4.

On December 3, 1937, the erythrocytes had decreased to 1,430,000 the hemoglobin remaining at 25 percent. A transfusion of 400 c.c. of citrated blood was given by a donor, type 4. This was followed in one hour by a severe post-transfusional reaction: a chill and temperature of 107°F.⁴

Upon ophthalmoscopic examination, fresh bilateral preretinal hemorrhages were found, each about 1 disc diameter in size.

On December 6, 1937, a transfusion of 500 c.c. of citrated blood was given; the donor, type 4. Ophthalmoscopic examination showed no increase of hemorrhages. On December 30, 1937, the blood count showed erythrocytes, 4,010,000; hemoglobin, 70 percent. The vision was O.D. 20/200; O.S. 20/200.

Ophthalmoscopic examinations showed the macular hemorrhages to be absorbing, reducing them to one third of a disc diameter in the right eye and one-half disc diameter in the left. On the next day (December 31, 1937), a fourth transfusion of 500 c.c. of citrated blood was given, using the original donor. A month later (February 2, 1938), the vision was O.D. 20/25; O.S. 20/20. An ophthalmoscopic examination showed that the hemorrhages had been totally absorbed; the maculae were normal.

COMMENT

In both cases, the hemorrhages were mainly preretinal with a predilection for the macular zone. In case 1, the hemorrhages absorbed slowly, the vision returning to normal only after an interval of about five months. This delayed return of normal visual acuity is compatible with the condition found upon analyzing

the case further; that is, first, the presence of a marked retinal arteriosclerosis; second, the retinal hemorrhages occurring in the course of a disease that is wasting in type.

In case 2, the return of visual acuity to normal was more rapid, requiring about two months. This prompt return of normal vision by reason of rapid complete absorption of the hemorrhages is easily understood by recalling that they occurred in a younger individual, suffering from a less emaciating disease and, furthermore, free of any recognizable arteriosclerosis. The return to normal vision in both cases is not to be questioned because it is surprising how completely preretinal hemorrhages usually become absorbed without residual evidence of their former location and extent. This occurs in spite of their tendency to extravasate and be profuse.

A review of the literature revealed that Sallmann,¹ as previously mentioned, was the first to report this complication. It is important to note that in none of his three cases was the fundus examined prior to the transfusion. The absence of retinal hemorrhages at that time was based on the fact that all three patients complained of blurred vision, not before, but immediately after the introduction of blood. These cases, including those of other authors, are listed in table 2.

Schaly² in 1926 reported four cases of identical nature. But again, it must be emphasized that fundus examinations were not made prior to transfusion in three cases and that the absence of retinal hemorrhages was based on the same assumption as Sallmann's. The fourth case was observed among a group of six that were studied with the sole purpose of noting any relation between blood transfusion and retinal hemorrhages. One had hemorrhages before with no increase after; three had none before or after; and the only positive

case was one in which the retinae before were free from hemorrhage.

In 1931, Messinger and Eckstein³ reported a series of 60 cases in which fresh retinal hemorrhages were seen 12 to 24 hours after transfusion in 10 cases, an incidence of 16 percent. Their results will be studied in more detail when com-

there was some debate as to the role played by the transfusion.

All the positive cases including mine and a single case reported by Borsotti⁶ are analyzed in the following table.

The question naturally arises as to the true role played by the transfusion *per se*. Even a cursory glance at table 2 reveals

TABLE 2
DATA ON REPORTED CASES OF FUNDUS CHANGES FOLLOWING BLOOD TRANSFUSION

Author	Diagnosis	Age years	Fundoscopy prior to Transfusion	Hemorrhages		Involve- ment at Maculae	Erythrocytes and Hemoglobin	Reac- tion
				Before	After			
Sallmann	Pernicious anemia	52	No	?	+	+	1,300,000	-
Sallmann	Pernicious anemia	53	No	?	+	+	690,000	-
Sallmann	This case presented not in detail but in gross aspect only							
Schalj	Pernicious anemia	40	No	?	+	+	1,290,000 25%	-
Schalj	Aplastic anemia	27	No	?	+	+	260,000 15%	-
Schalj	Aplastic anemia	?	No	?	+	+	690,000 14%	-
Schalj	Pernicious anemia	40	Yes	-	+	+	940,000 23%	-
Messinger and Eckstein	Acute lymph. leukemia	4	Yes	+	+	+	3,220,000 60%	-
Messinger and Eckstein	Lymph. leukemia	8	Yes	-	+	-	1,220,000 20%	-
Messinger and Eckstein	Lymph. leukemia							
Messinger and Eckstein	Purpura hemorrha-	26	Yes	-	+	+	1,450,000 30%	-
Messinger and Eckstein	gical							
Messinger and Eckstein	Essential menor-	19	Yes	-	+	-	1,700,000 40%	-
Messinger and Eckstein	rhagia							
Messinger and Eckstein	Incomplete	33	Yes	-	+	-	1,430,000 25%	-
Messinger and Eckstein	miscarriage							
Messinger and Eckstein	Fibroid uteri	50	Yes	-	+	-	1,220,000 10%	-
Messinger and Eckstein	Banti's disease	12	Yes	-	+	-	1,150,000	-
Messinger and Eckstein	Carcinoma stomach	55	Yes	-	+	-	3,000,000 40%	-
Messinger and Eckstein	Carcinoma cervix	49	Yes	-	+	-	2,500,000 40%	-
Titov and Bogomolova	Pernicious anemia	?	Yes	+	+	?	830,000 22%	-
Titov and Bogomolova	Pernicious anemia	?	Yes	+	+	?	690,000 12%	-
Titov and Bogomolova	Hemorrhagic pur-	?	Yes	+	+	?	3,900,000 60%	-
Titov and Bogomolova	pura							
Titov and Bogomolova	Circulatory insuffi-	?	Yes	+	+	?	1,330,000 20%	-
Titov and Bogomolova	ciency							
Titov and Bogomolova	Myocarditis	?	Yes	+	+	?	1,740,000 11%	-
Titov and Bogomolova	Sepsis	?	Yes	+	+	?	1,120,000 20%	-
Titov and Bogomolova	Gastric ulcer	?	Yes	-	+	?	3,800,000 63%	-
Borsotti	Secondary anemia	34	No	?	+	+	1,530,000 48%	+
Gray	Nontropical sprue	58	Yes	+	+	+	1,250,000 35%	-
Gray	Gastric ulcer	26	Yes	-	+	+	1,450,000 25%	+

paring them with those obtained by me and by Titov and Bogomolova.⁴ The latter investigators studied 100 cases, the largest series of all, and found only seven positive cases, an incidence of 7 percent.

Frey⁵ has noted the occurrence of massive retinal hemorrhages following transfusion in several cases of leukemia and pernicious anemia. Routine ophthalmoscopic examinations previously had shown no hemorrhage. He adds that

that a large percentage of cases belong to the blood dyscrasias and that the remaining ones are complicated by a pronounced secondary anemia. Hence a retinosis due to deficiency of erythrocytes, irrespective of transfusion, is to be expected, and this is verified by the frequent finding of such at the time of the initial ophthalmoscopic examination. Therefore, the possibility that the hemorrhages appear coincidentally is likely. In

view of this, I do not believe that we can ascribe a major etiological role to the transfusion *per se*, and only further investigation will reveal whether a true etiological relationship does exist.

Chutko⁷ and Titov and Bogomolova⁴ also believe that transfusions do not form a basic etiology of retinal hemorrhages, but might, in the presence of other factors predisposing to them, either initiate or increase the size and number.

The observations of Messinger and Eckstein were more positive in their cases; the transfusion played a greater role. This is further emphasized by the fact that three of their cases showed an increased number of hemorrhages after the second transfusion. They conclude that retinal hemorrhage in some degree is a frequent sequel to blood transfusion.

Granting that transfusions do play an etiologic role, even though minor, an attempt must be made to explain their pathogenesis. Sallmann refers to the retinal hemorrhage as a retinal apoplexy and believes it to be merely mechanical from a sudden increase of volume which in turn increases the blood pressure. He further added that the retinal hemorrhage *per se* occurred by rhexis. This belief is substantiated by the frequent occurrence of the diffuse preretinal type.

Schaly agrees with the transfusion hypertension theory, but differs in his opinion by stating that the retinal hemorrhages occurred by diapedesis. The transfusion hypertensive factor would be extremely variable, the increase of pressure depending on several conditions; for example, volume and pressure of blood before transfusion, state of vascular structure and tonicity, volume of blood transfused, rate of transfusion, and such factors. Both agree, however, that a slight increase would be sufficient, especially in the presence of vascular disease. Supporting this latter statement is the finding that no positive results were

observed in any case of acute anemia, postoperative or traumatic, but only in the chronic cases in which some degree of vascular degeneration with increased permeability would be expected. Therefore, a mechanical factor as such is plausible and cannot be denied. In this event, one would expect the hemorrhage to occur during or immediately after the transfusion. However, this does not seem to be true if the time of the patient's complaints can be taken as a criterion, unless the hemorrhage begins beyond the macula and finally produces a positive scotoma by direct extension. I agree with Borsotti that transfusion hypertension is not the primary factor. If such were the case, retinal hemorrhages could be expected to occur after saline or glucose infusions. No direct observations have been made on this problem, but it probably does not occur.

Sgrosso⁸ indicated an embolic closure of capillaries as the reason for retinal hemorrhages. This also must be considered plausible, especially in cases exhibiting posttransfusion reactions of a systemic nature. The basis for this type of reaction resolves itself into the consideration of errors of technique and incompatibilities. Among the latter may be stressed the diet of the donor which, according to Price,⁹ plays an important part in the production of reactions. The problem of sensitization is yet to be studied, but it is interesting to note that in some cases the hemorrhages were seen only after repeated transfusions.

CONCLUSIONS

1. A definite etiological relationship of transfusions to retinal hemorrhages cannot be stated with certainty at the present time.

2. Retinal hemorrhages following transfusions have occurred only in those cases in which a preëxisting condition itself predisposed to them.

3. An etiological role, if any, is certainly minor in action.
4. Further investigation and observation must be carried out in this phase.
5. The occurrence of retinal hemorrhages is not a serious complication although Schaly considered the opposite to be true.

212 Bigham Street.

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ISOLATED RHEUMATIC NODULE OF THE UPPER EYELID*

REPORT OF TWO CASES

JACK S. GUYTON, M.D., AND JOHN M. McLEAN, M.D.

Baltimore

During the past three years two cases, each presenting an unusual type of nodular tumor of the upper eyelid and brow, and apparently rheumatic in nature, have been encountered in the Wilmer Institute. Considering the rather common occurrence of rheumatic fever and the relative frequency of rheumatic nodules elsewhere in the body, it may well be that nodules such as these have thus far been unrecognized by the ophthalmologists. Because of the interesting clinical and pathological possibilities that have arisen in these cases, and because no description of similar cases can be found in the literature, the following report is made.

REPORT OF CASES

Case 1. D. S., a 4-year-old colored boy, first came to the Wilmer Dispensary on June 16, 1938, with a history of a small swelling of the external part of the right upper lid of two weeks' duration. The family history was non-contributory.

The patient was born at term in the Johns Hopkins Hospital on September 7, 1934, and suffered a birth injury resulting in partial right brachial-plexus palsy. When he was eight months old he was admitted to the Pediatric Service with meningococcus septicemia and arthritis, but no meningitis. He soon recovered completely from this. An unexplained slight enlargement of the heart to the right was noted at that time. Always quite healthy since then, he has never had cough, shortness of breath, fever, nor any other systemic symptoms.

*From the Wilmer Ophthalmological Institute of the Johns Hopkins Hospital and University.

Physical examination revealed a small, hard, freely movable mass at the external rim of the right orbit beneath the brow, with several small "shotty" masses adjacent to it in the lateral portion of the upper lid (fig. 1). The results of the remaining ocular examination and general physical examination were otherwise normal except for the old brachial palsy. Repeated X-ray studies of the right orbit showed normal bony structure and no abnormalities. During the course of the next six weeks the masses seemed to become larger and less freely movable. The patient was admitted to the Wilmer Institute on August 3, 1938, and the tumor removed under ether anesthesia. It had no definite capsule and was partially adherent to the overlying skin and also to the periosteum of the upper lateral rim of the orbit.

Description of specimen. Gross: The specimen measures approximately 35 by 10 by 8 mm., and consists of a fibrous mass containing numerous small nodular elements; it is not encapsulated.

Microscopic: In the section five or six confluent nodular lesions (fig. 2A) can be made out, averaging approximately 2 mm. in diameter. These are surrounded by connective tissue and are not well demarcated. The typical nodular lesion has a necrotic center, the necrosis being of a "dry," acidophilic type, consisting principally of degenerated swollen collagen fibrils, with some fibrin deposition and a few picnotic nuclei present in some areas. The cells surrounding this necrotic center are arranged predominantly in radial fashion (fig. 2B). From their appearance, they may be either modified fibroblasts or

macrophages. The nuclei are in general slightly larger than in normal fibrocytes, oval, with a moderate reticulum, and usually no definite nucleoli, and there are many more nuclei as compared with cyto-

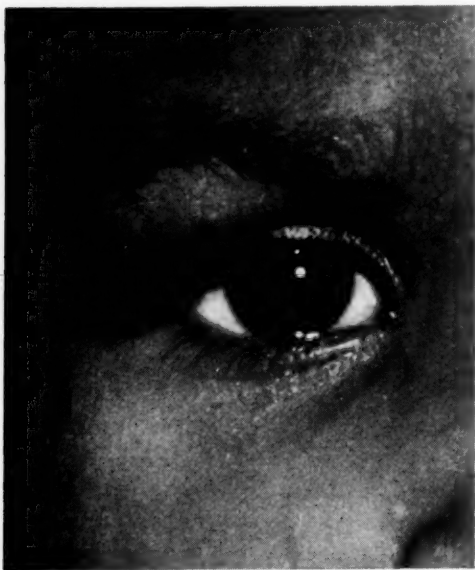


Fig. 1 (Guyton and McLean). Small tumor over upper outer rim of orbit; case 1.

plasm than in normal connective tissue. With the Mallory connective-tissue stain, only a very few collagen fibrils can be demonstrated among these cells, and these fibrils have an orderly, arching arrangement that suggests that they have been infiltrated by, rather than formed from, the inflammatory cellular elements. This stratum of cells, which varies greatly in thickness and contains few vessels, merges indefinitely into the surrounding connective tissue. The connective tissue in places appears to be normal subcutaneous tissue and contains few vessels, but in other places it is irregular and contains numerous newly formed capillaries. The lesion is not confined to the formation of definite nodules—in some areas of the section there is simply an irregular degeneration of bundles of collagen fibrils,

with an infiltration of cells between the degenerated bundles similar to those surrounding the circumscribed necrotic zones. There is a very slight diffuse infiltration of some areas with lymphocytes and plasma cells, but these are an inconspicuous part of the picture. The appearance of the vessels varies greatly in different parts of the section. There are a number of newly-formed capillaries, but many of the remaining vessels appear to be essentially normal. Some of the arterioles exhibit proliferation of the endothelium and thickening of the intima, and there is complete obliteration of the lumen of a few of the smaller arterioles. The largest arteriole in the sections (see figure 3) presents a remarkable proliferation of cells similar to those surrounding the necrotic lesions—these cells appear to originate from the endothelium. There is no perivascular infiltration in any part of the sections. No giant cells, epithelioid cells, polymorphonuclear leucocytes, nor xanthoma cells are seen anywhere.

In view of the etiologic possibilities in the production of nodules of this type—that is, rheumatic fever, rheumatoid arthritis, syphilis, yaws, and granuloma annulare—the patient's condition was investigated more fully from the medical standpoint. Repeated physical examination revealed that the heart was entirely normal except for a questionable faint systolic murmur in the pulmonic area, the joints were entirely normal except those affected by the old brachial palsy, no nodules were present over any other part of the patient's body, and nothing suggestive of congenital syphilis or of chorea could be found. Repeated blood Wassermann reactions were negative (as was serological examination of the mother before the patient's birth). An electrocardiogram was normal. A teleoroentgenogram revealed no enlargement of the heart. Corrected sedimentation rate, however, was

found to be 28 mm. for one hour. While the patient was in the Wilmer Institute, his heart rate varied between 90 and 100

since been followed in the Dispensary. He was last examined on October 10, 1938. At that time there was no recur-

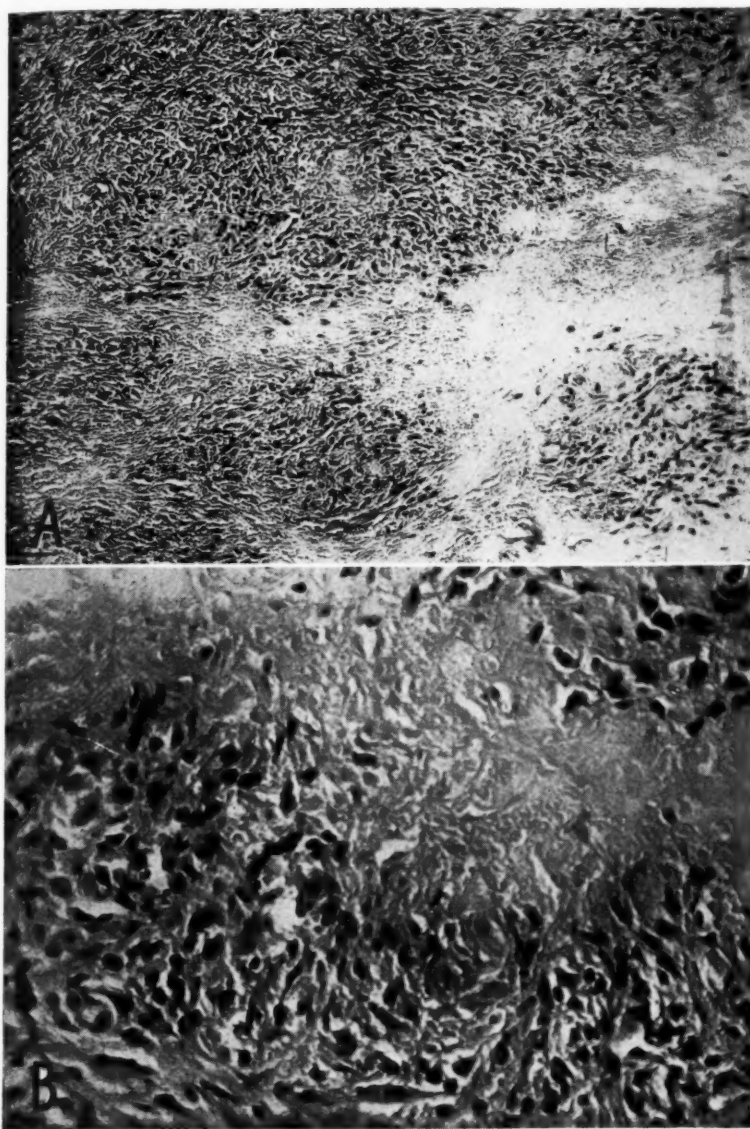


Fig. 2 (Guyton and McLean). A, nodular lesion with necrosis; case 1. Hematoxylin and eosin stain, $\times 90$. B, edge of a necrotic area; case 1. Hematoxylin and eosin stain, $\times 320$.

and his temperature between 99 and 100. He was not cutaneously sensitive to even 1 mg. of old tuberculin. The patient was discharged on August 15, 1938, and has

rence of nodules in the right upper lid, no nodules were present over any other part of the body, the heart and lungs were entirely normal, the joints were normal



Fig. 3 (Guyton and McLean). Endothelial proliferation of a large arteriole. Verhoeff-van Gieson stain, $\times 430$.

except for the old birth injury, there was no evidence of chorea, and corrected sedimentation rate was 16 mm. per hour. The patient had a slight cold at that time.

Case 2. H. B., a colored boy born November 14, 1933, was first seen in the Wilmer Dispensary on November 18, 1935, with a history of a small lump in the right upper lid near the outer canthus which had appeared three weeks previously and gradually increased in size. The family history was non-contributory.

The patient was first seen in the pediatric service of the Johns Hopkins Hospital at the age of four weeks because of a feeding problem. Physical examination at that time revealed nothing abnormal. Blood Wassermann reaction of the mother was negative. Following this he was always quite healthy except for a few colds.

Physical examination revealed a firm, well-defined mass above the outer canthus of the right eye, lying just in front of the upper temporal orbital rim but not attached to it. It measured approximately 15 by 8 mm. in size and protruded about 5 mm., with the skin freely movable above it. The results of the remaining ocular examination were normal, and of the general physical examination were entirely normal except for a finding of hypertrophied tonsils. X-ray studies of the right orbit showed no abnormality. Roentgenograms of the chest, electrocardiogram, and the determination of the sedimentation rate were not made. The patient was admitted to the Wilmer Institute and the tumor removed on November 21, 1935, under ether anesthesia. Convalescence was uneventful.

Description of specimen. In all essential details, these sections (fig. 4A, B, C) are histologically identical with those of case 1. There are a few minor variations, as follows: There is somewhat more deposition of fibrin in the necrotic areas; the connective tissue surrounding the discrete lesions is more irregular in appearance; arterioles present more subendothelial proliferation, with obliteration of the lumen of a larger number of them; and there is a small amount of perivascular infiltration with lymphocytes, plasma cells, and a few polymorphonuclear leucocytes.

The patient was not seen again until June 27, 1936, when he was seen in the Pediatric Dispensary because of a contusion of the ear. Except for this and a mild cold, a complete physical examination performed at that time was entirely negative for pathology. Following this

visit the patient did not return, and recent attempts to find him for further examinations have been unsuccessful.

COMMENT

The nodules described belong to the group of subcutaneous fibroid nodules usually referred to as the "juxta-articular type." They were first noticed in cases of rheumatic fever, and were considered pathognomonic of that disease until the latter part of the nineteenth century, when cases were noted in which there were no demonstrable signs of rheumatism. Since then it has become evident that they may occur in connection with rheumatic fever, rheumatoid arthritis, syphilis, and probably yaws and granuloma annulare.

Dawson and Boots¹ in 1930 emphasized the occurrence of these nodules in rheumatoid arthritis. They were found in 40 out of 200 such cases and varied in size from scarcely palpable nodules to those the size of olives. They were most common on the dorsum of the forearm, but also appeared over the olecranon itself, in the wall of the olecranon bursa, and over the dorsum of the hands, the knees, the sacrum, and the scalp. They were not attached to the skin or periosteum, but frequently were related to tendon sheaths and walls of bursae. They usually developed slowly and persisted for years, but sometimes small ones ran a course of only a few weeks. Dawson and Boots examined histologically nodules from 14 of these patients, and reported the following essential features: 1. Area of central necrosis, apparently due in the earliest stages to a gelatinous swelling and disintegration of collagen bundles. Depending on the age of the nodule and severity of the process there was a variable amount of fibrin deposition and inflammatory-cell

infiltration. 2. Surrounding zone of characteristically arranged large mononuclear cells, usually in radial arrangement. 3. Enclosing zone of relatively avascular fibrous tissue. 4. Absence of changes in the blood vessels of the nodule itself. However, in the surrounding arterioles there were often subendothelial hyperplasia and deposition of fibrin, splitting or reduplication of the elastic lamella, and perivascular infiltration with large mononuclear and small round cells. These authors expressed the belief that similar nodules are found only in rheumatic fever and rheumatoid arthritis. They were unable to culture any bacteria from the nodules.²

Swift³ in his classic review of rheumatic fever points out that often only one type of manifestation of rheumatic fever may be apparent in a patient for a long period of time, and that this fact supports the conception that chorea or subcutaneous nodules occurring in the absence of any other rheumatic symptoms may be rheumatic in nature. He points out that in early stages of the nodules in rheumatic fever there may be some polynuclear cells closely resembling the "irritation giant cells" of the Aschoff bodies.

Hopkins⁴ in 1931 presented a summary of this type of nodule in general. In his opinion considerable confusion had been created as to the etiology because some authors had stressed syphilis as an etiologic factor, as opposed to the beliefs of Dawson and Boots. He reported from the Syphilis Clinic of the Johns Hopkins Hospital 14 cases with subcutaneous nodules of the juxta-articular type. Two of these patients had rheumatoid arthritis, and in them the nodules did not disappear with antisyphilitic treatment. The others showed no sign of rheumatic fever or rheumatoid arthritis; eight of these returned for adequate antisyphilitic treatment, and in these the nodules promptly

disappeared. The histological picture of these nodules was indistinguishable from that of nodules from rheumatoid arthritis. No spirochetes could be found, and one rabbit inoculation was negative. He cited several attempts by other investigators at rabbit inoculation, with one positive result by Jessner and Rosiansky after a double passage.

The description given by the Harvard Expedition⁵ of the nodes in yaws is quite

similar to those given by Jessner⁶ and others of the nodes in syphilis, and the descriptions of rheumatoid nodules by Dawson and Boots. They noted the constant occurrence of numerous xanthoma cells in their specimens, however, and the photomicrographs included in their report differ somewhat in appearance from those of the syphilitic, rheumatic, and rheumatoid nodules we have examined. Jessner, however, reports the occasional

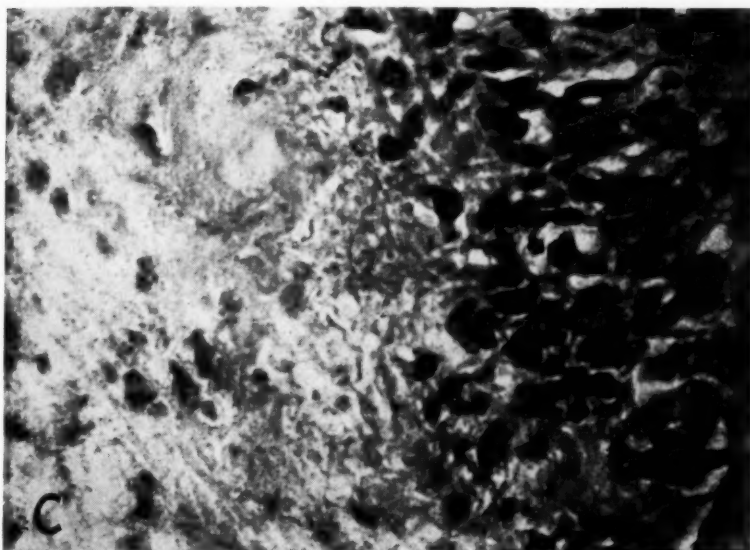


Fig. 4 A (Guyton and McLean). Nodular lesion with necrosis; case 2. Hematoxylin and eosin stain, $\times 90$.



Fig. 4 B (Guyton and McLean). Edge of a necrotic area; case 2. Hematoxylin and eosin stain, $\times 320$.

Fig. 4 C (Guyton and McLean). Cellular detail at edge of necrotic area; case 2. Hematoxylin and eosin stain, $\times 540$.



occurrence of xanthoma cells in luetic nodules, and says there may be considerable variation in the histological picture.

Goodman and Ketron⁷ in 1936 presented a summary of unusual cases of granuloma annulare and of its histological appearance. They concluded that this disease presents a characteristic histologic picture, particularly in the early stages, consisting of a granular degeneration of the connective tissue, followed by a cellular infiltration of large mononuclear cells of the macrophage type, which, with connective-tissue cells, tend to arrange themselves between the partially degenerated fibers or around the edges of circumscribed necrotic zones in a characteristic manner; in the later stages, they found that granuloma annulare resembles histologically the juxta-articular rheumatoid nodules, except that they found no vascular changes. Granuloma annulare is primarily a skin disease, easily distinguishable from our cases, but there have been a few cases of a subcutaneous variety reported. Goodman and Ketron prefer to regard these as not being true granuloma annulare, but there is considerable disagree-

ment on this point. A case reported as such by Grauer⁸ is of considerable interest in that it more closely simulates our cases than any other we have been able to find: A two-year-old white boy developed nodular subcutaneous lesions of the scalp and typical cutaneous granuloma annulare lesions of the left wrist and right tibia, all appearing during the preceding five months. History was otherwise essentially negative except for loss of three or four pounds and slight irritability since the onset of the lesions. Physical examination and X-ray studies were normal. The sedimentation rate was not reported. Biopsies were taken, and judging from the description and a photomicrograph the subcutaneous nodules of the scalp were histologically identical with those of our cases. The vessels were said to be "essentially unchanged except for moderate proliferation of the endothelium."

The case of dermatitis atrophicans with nodular formation reported by Ketron⁹ in 1913, which was classed as a juxta-articular nodule by Hopkins, appears to us to differ considerably from the rheumatic type of nodule. The case of gen-

eralized scleroderma with numerous subcutaneous nodules reported by Gray¹⁰ is given in too brief detail to be classified.

SUMMARY AND CONCLUSIONS

Two cases are reported in negro children, both of whom show isolated subcutaneous nodular inflammatory tumors, in the region of the upper lid and brow, of the histologic nature of "rheumatic" nodules. As the review of the literature indicates, such nodules may be: (1) the

sole manifestation of rheumatic fever, (2) a form of either syphilis or yaws, (3) an accompaniment of rheumatoid arthritis, or (4) a subcutaneous form of granuloma annulare. Since all but the first and last possibilities can be definitely ruled out in our cases, we are forced to conclude that they represent either a manifestation of rheumatic fever or the subcutaneous variety of granuloma annulare—which, after all, may be one and the same thing.

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THE NEED FOR SOCIAL SERVICE WORK IN GLAUCOMA*

AUGUST F. JENSEN, M.D.**

Grand Forks, North Dakota

AND

HARRY S. GRADLE, M.D.

Chicago

This is a study based on new cases of glaucoma admitted to the Illinois Eye and Ear Infirmary in-patient department between January 1, 1933, and January 1, 1937. None of the patients admitted before that time is now coming for treatment. All diagnosed in the out-patient department as glaucoma patients were sent to the hospital for admission; but many refused to go and, consequently, no out-patients are included in these statistics. This study was made to determine how many returned to the clinic for treatment and how long they continued treatment. Only the primary glaucomas are considered.

During this period 239 patients were admitted to the in-patient department of the Illinois Eye and Ear Infirmary. Of these, 133 were males and 106 were females. Their ages were as follows:

Age	Number of Cases
Between 1 and 10 years	0
Between 10 and 20 years	4
Between 20 and 30 years	0
Between 30 and 40 years	12
Between 40 and 50 years	25
Between 50 and 60 years	82
Between 60 and 70 years	67
Between 70 and 80 years	42
Over 80 years	7

The greatest number were in the fifties and sixties and consequently had a life expectancy of 15 to 20 years.

The cases were grouped into five types as follows:

* From the Illinois Eye and Ear Infirmary.

** Formerly Senior Resident at the Illinois Eye and Ear Infirmary.

Type	Number Both Eyes of Cases Involved		R.	L.
Acute uncompensated ..	33	4	19	18
Chronic uncompensated .	3	1	2	3
Compensated	161	113	141	133
Absolute	41	11	30	22
Hydrophthalmos	1	1	1	1

In 130 cases both eyes were involved and in 109 only one eye was involved. Of patients with both eyes involved, the majority were over 50 years of age. Out of this group, there were only 33 cases of acute uncompensated and 3 cases of chronic uncompensated glaucoma.

Six of the patients were totally blind in both eyes when first seen; several were blind in one eye, and had only light perception in the other. In the 239 cases, 369 eyes were involved. Of those:

Vision	Number
Totally blind	74
Light perception	86
Hand movements to 20/200	104

In every case, the best possible vision with correction was recorded.

There was considerable variation as to the time the patient had noticed the onset of the condition before coming to the clinic. Many of them could not give a definite statement, for there had been a gradual loss of vision over a considerable period of time. The younger the patient the more definitely was the time of onset determined.

The length of time that elapsed between subjective onset of symptoms and first visit to the infirmary was found to be as follows:

<i>Time</i>	<i>Number of Cases</i>
Less than one month	19
One to six months	50
Six months to one year	28
One year to two years	40
Two years to three years	24
Three years to four years	19
Four years to five years	14
More than five years	5

Most of the patients had noticed that they had to have their glasses changed more often and finally they were not able to obtain sufficient visual improvement with a change of glasses. Quite a number of them were referred to the clinic for cataract operation, or had been diagnosed as cataract patients elsewhere and told to wait for operation until the cataracts were "ripe."

There were 296 hospital admissions. Of those:

<i>Number admitted</i>	<i>Number of Cases</i>
Only once	195
Twice	36
Three times	0
Four times	0
Five times	1
Six times	1

Of the 239 patients admitted, 171 were operated upon and 68 underwent no operation. There were 215 operations performed.

Twenty-nine percent of the patients operated upon were observed less than one month. Sixty percent were observed less than six months subsequent to operation. Of the 239 patients treated at the hospital during this time, 172 were treated less than six months. Of the patients treated, the duration of observation was as follows:

<i>Observation</i>	<i>Number of Cases</i>
Less than one month	88
One month to six months	84
Six months to one year	22
One year to two years	16
More than two years	19
Still coming to the clinic for observation .	8

One hundred and seventy-two or nearly 72 percent of the patients were observed less than six months. They were probably not going elsewhere for treatment, for in this group only one had been treated for glaucoma elsewhere before coming to the clinic. This patient had been treated at a private clinic and hospitalization was advised. She was unable to pay for the hospital care, so was referred here.

Three patients did not remain in the hospital long enough to be studied. In all of the cases admitted, the tension was controlled at the time of discharge.

Only eight of the patients admitted during this time are still coming to the clinic under observation. These have been coming regularly and have kept up their treatment.

Out of the 239 patients admitted to the hospital during the period from January 1, 1933, and January 1, 1937, only 67 returned to the clinic for observation following their hospitalization. One hundred and seventy-two patients received no further treatment.

We have no way of knowing of what value our treatment has been unless our patients return for follow-up work. One hundred and seventy-one patients were operated upon, 40 percent of whom were not seen at all after their discharge from the hospital. There is no way of knowing what operation gave the best results nor how long it was efficient. Of the entire group admitted during this time 72 percent did not receive care after discharge.

No matter how thorough our study or how well we were able to classify the case and outline the procedure of treatment, the patient has not been benefited as far as we know. These figures prove that our *clinical cases of glaucoma are not receiving the aftercare necessary to prevent almost certain blindness*. The percentage of blindness due to glaucoma varied throughout the world from 6.5

percent in the United States to 18 percent in some of the European countries. Such blindness is due to: (1) Lack of recognition of the disease until permanent damage has been done; (2) inadequate medical or surgical care; (3) failure to observe the patient sufficiently long to insure against the further loss of vision from hypertension.

This is not the place to discuss the first two aspects, although the third table in this paper could open the way. The question here is, "How can the third phase be eliminated as far as is humanly possible?"

The failure to observe glaucoma patients over a sufficient length of time must be attributed partly to the attending physician and partly to inherent negligence on the part of the patients. In a busy clinic, the physician has not the time nor the patience to sit down and explain painstakingly to the patient the character of the disease, the impossibility of improvement of vision beyond the existing conditions, the necessity of long-continued observation, and the importance of following medical or surgical directions implicitly. On the other hand, clinic patients are apt to be of a lower mental caliber and consequently cannot comprehend the situation. Furthermore they are apt to find no improvement in vision after weeks of

use of drops or after operation and they drop the whole matter, accepting the loss of vision as something inevitable. In addition, if the patient is the support of the family, a visit to the clinic consumes nearly a whole day, causing a loss of one fifth or one sixth of the weekly income, which is an economic factor that must be given serious consideration.

Much discussion along these lines is possible, but unnecessary, for the remedy is at hand, thanks to George Derby, who showed us the way. Adequate medical social service is the answer and thereby well over 80 percent of the third aspect of the problem can be solved.

Only in that or some similar way can we keep under necessary observation the cases of glaucoma that seem doomed to ultimate blindness from neglect. Medical skill can prevent a large share of blindness from glaucoma, but only if the patients are there for the doctors to work upon. No physician can prevent loss of vision from hypertension by absent treatment. Four years from now, we will make a similar report upon the management of glaucoma under the added control by Social Service, and we think it will be more cheerful.

904 West Adams Street.

OPHTHALMOMYIASIS INTERNA ANTERIOR*

REPORT OF HYPODERMA LARVA IN ANTERIOR CHAMBER

C. S. O'BRIEN, M.D., AND J. H. ALLEN, M.D.

Iowa City, Iowa

Rare indeed is the presence of a maggot in the anterior chamber of the human eyeball. Herewith is presented the first report of a case from the Americas; however, DeBoe¹ and Anderson² have each published an account of a larva in the vitreous chamber. The latter author gives a complete review of the literature to 1935 and only five cases^{3, 4, 5, 6, 7} involving the anterior chamber, none of which was reported from the Western Hemisphere, have been added to the 10 summarized by Anderson.

J. P., white, a schoolboy, aged six years, was referred by Dr. Robley Goad of Muscatine, Iowa, on September 28, 1938. There was no history of injury to the eye, but the patient had run a nail into his foot while walking through the barnyard on September 5th. On September 15th, the right eye became red, congested, and painful, and the next day, when seen by Doctor Goad, the crystalline lens appeared to be subluxated and the intraocular tension was 65 mm. Hg (Gradle-Schiötz). Pilocarpine 1 percent was ordered and the eye improved for several days, but the tension rose again and the child was referred for consultation on September 28th. On this date the right globe was painful and deeply congested, the cornea was clear, there were many cells in the aqueous, iridodonesis was present, the lens was subluxated, and the intraocular tension was elevated. During examination of the anterior segment with the loupe, a small elongated light-gray object (fig. 1) was seen near the pupillary margin,

extending from about the 1:00- to the 3:00-o'clock position. With the biomicroscope this appeared as a gray, translucent, cigar- or zeppelin-shaped object approximately 0.5 mm. in its greater diameter and 2.5 mm. in length. One end was blunt, rounded, and somewhat darker, while the opposite end was somewhat pointed. Extending upward from the pupil and encompassing the body was a small amount of vitreous. A diagnosis of larva in the anterior chamber was made. It appeared that the maggot had worked its way forward from the vitreous through the zonule and into the anterior chamber, carrying a small amount of vitreous with it. In this way only could one account for the subluxation of the lens and the presence of vitreous around the larva. The patient was advised to have an operation and the larva was removed by Doctor Goad on September 30th.

The larva was identified as that of *Hypoderma* by Charles T. Greene, associate entomologist in the United States Department of Agriculture. According to Riley and Johannsen⁸ *Hypoderma* is the botfly of sheep, ox, and deer; it is commonly known as the warble or heel fly of cattle. Two types are recognized, *Hypoderma bovis* and *Hypoderma lineatum*, but it is impossible to differentiate them in the first-stage larva.

The following report was received from the Department of Agriculture: "The first stage larva of *Hypoderma* when hatched from the egg measures from 0.55 to 0.65 mm. in length and from 0.15 to 0.18 mm. in width at its greatest diameter. The width is greatest at the posterior end, and the larva tapers to the head. It is

* From the Department of Ophthalmology, College of Medicine, State University of Iowa.

creamy or dull white in color and densely covered with spines on all segments, the anterior borders bearing the heaviest spines in transverse rows, followed usually by six rows of spines, more or less regularly placed, and slightly decreasing in size toward the posterior border of the segment. The anal segment differs from

are pointed at each end, especially the forward one, which terminates in a sharp point. A prominent inward-curving tooth is located about one third the length of the entire hook from the anterior tip. A stout, sharp spine directed forward projects slightly between the mouth hooks. The anterior spiracles appear as two minute

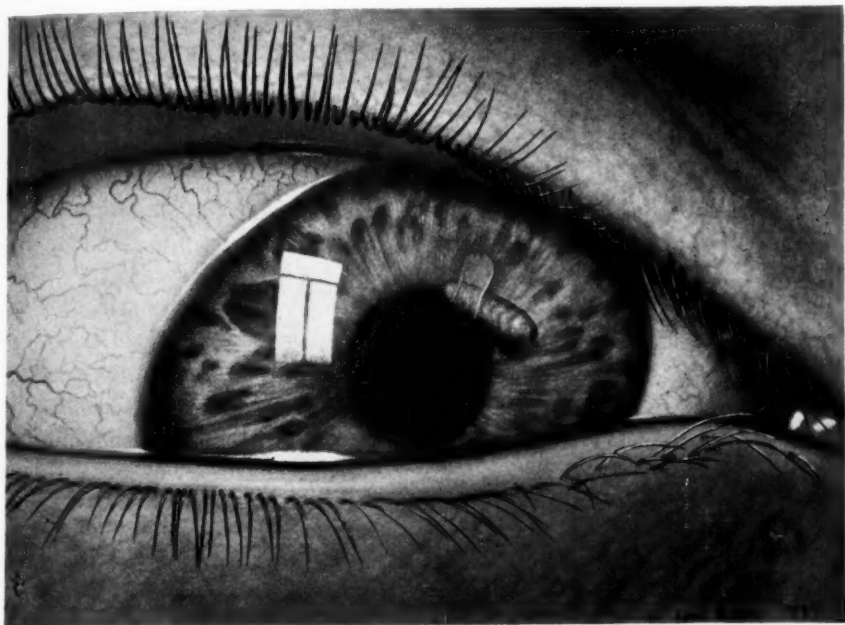


Fig. 1 (O'Brien and Allen). Hypodermis larva, partially surrounded by vitreous, in anterior chamber.

all those preceding in that it bears spines of three distinct types. The posterior spiracles, which are represented by two dark circular spots, are protected by two or three rather large, triangular spines located near their borders. The cephalopharyngeal skeleton (mouth hooks, and so forth) is composed of two long and nearly parallel rods slightly curved outward at the tip on which two crescent-shaped mouth hooks articulate. The hooks

circular elevations above the mouth parts at the tip of the head."

Up to the time of submission of this report, which was six months after removal of the larva, there was no further inflammation nor any recurrence of the glaucoma.

SUMMARY

The first reported case of ophthalmomyiasis interna anterior in the United States is recorded.

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HYPERMETROPIA*

ALFRED COWAN, M.D.
Philadelphia

My reason for discussing this subject is to offer a few observations concerning a condition which, although the most frequently met with in any ophthalmologist's practice, is hardly ever mentioned in modern ophthalmic literature. One might be led to believe that there is nothing more to be said on the subject; but there are some factors concerning the management of hypermetropia about which there is still a difference of opinion, and many important considerations that are too slightly stressed in the textbooks.

Although hypermetropia is found more often than any other refractive error of the human eye, its nature was the last to be comprehended. The occurrence of myopia has been known for centuries, and its theory fairly well understood since the explanation by Kepler in 1604. Regular astigmatism was first discovered by Thomas Young in 1793, and thoroughly described by Airy in 1827. That accommodation depends on a change in the form of the crystalline lens was correctly reasoned by Thomas Young as early as 1801. But the existence of hypermetropia was not even suspected until 1811, when a case was reported by Wells. Donders

very generously attributes the discovery of hypermetropia to James Ware who, before the Royal Society, in 1812, spoke the following remarkable words: "There are also instances of young persons, who have so disproportionate a convexity of the cornea or crystalline, or of both, to the distance of these parts to the retina, that a glass of considerable convexity is required to enable them to see distinctly, not only near objects, but also those that are distant; and it is remarkable, that the same glass will enable many such persons to see both near and distant objects; thus proving that the defect in their sight is occasioned solely by too small a convexity in one of the parts above mentioned, and that it does not influence the power by which their eyes are adapted to see at distances variously remote. In this respect such persons differ from those who had the crystalline humor removed by an operation; since the latter always require a glass to enable them to discern distant objects, different from that which they use to see those that are near." Ware's discovery, however, was not appreciated by his contemporaries, because it was not understood, even by Ware himself.

From time to time after this, isolated cases of high degrees of hypermetropia were reported, but it was thought to be a

* Read before the Washington, D.C., Ophthalmological Society, January 9, 1939.

disease, a form of premature presbyopia. It was called by such terms as hyperpresbyopia or oversightedness. The amblyopic eye in convergent squint was believed to be myopic. Also, those patients with high degrees of hypermetropia who could see by holding objects very close to the eyes were thought to be myopic. Ophthalmologists could not understand how convex lenses could improve the vision of a young person for distant objects. They were prejudiced against them, thinking harm would result and always advised against their use. This confusion lasted until 1858, when the mystery was entirely cleared up by the masterly work of Donders. Not until then was hypermetropia distinguished from presbyopia. At the meeting in Heidelberg, in 1859, he showed that presbyopia and the so-called hyperpresbyopia are entirely different conditions and argued that the term hyperpresbyopia should no longer be used. Helmholtz, who was at the meeting, immediately named it hyperopia, but Donders, on more fully working out his system, thought the term hypermetropia would be more in accordance with the nomenclature he had already employed in the words ametropia and emmetropia.

Optically the hypermetropic eye is weak. It is generally considered—in contradistinction to myopia, which is the result of overdevelopment of the eyeball—that hypermetropia is due to arrested development. Still, most of us feel that the hypermetropic eye is the strong eye, physically; even that the low-grade hypermetropic eye is ideal in the case of a healthy young individual. Gullstrand gave 1 D. of hypermetropia to his exact schematic eye. If it is true that the low-grade hypermetropic eye is ideal, it is hard to understand just how to classify the emmetropic eye because, not infrequently, we do find such eyes. Often we find a lowered visual acuity in very high

degrees of hypermetropia, and almost invariably we see it stated that the poor vision is part of the retarded or abnormal development of the eyeball as a whole. This has always seemed unreasonable to me. Surely, the sensitivity of the retina does not progressively increase with the growth of the eyeball during the growing age. It is reasonable to suppose, and no doubt true, that hypermetropia is the result of retarded growth of the eyeball. Hypermetropia is normal in infants; but the physical cause of the lowered visual acuity in adults with high-grade hypermetropia must certainly be present at birth and, therefore, congenital. Otherwise all children should be expected to have subnormal vision. There are other reasons for believing that eyes with very high grades of hypermetropia and lowered visual acuity are congenitally defective and not the result of retarded growth; at least, not after birth. During the growing period, ordinary degrees of hypermetropia decrease, emmetropia goes over into myopia, and myopia increases; but cases of very high hypermetropia decrease very little, if at all. The highly hypermetropic eye with low visual acuity is generally a congenitally defective eye and should be considered pathologic, as is microphthalmus. Hypermetropia of low degree is as good as emmetropia, but only up to the presbyopic age. The presbyopic emmetropic eye is certainly better than the presbyopic hypermetropic eye. At my age I should prefer to have exactly 2.50 D. of myopia.

A hypermetropic person has to exert some accommodation at all times in order to see any real object distinctly. The essential cause of asthenopia in hypermetropia is fatigue of accommodation together with the secondary effects of the contraction of the pupil and of convergence. Certainly most of the discomfort of which the uncorrected hypermetropic

person complains is due to the excessive accommodation he must constantly use, but the asthenopia that results from the accompanying contraction of the pupils is seldom stressed. In any case of uncorrected ametropia the size of the diffusion images is proportionate to the size of the pupil. Hypermetropic persons of medium and high degree often get their best effect by accommodating as much as possible, not so much to correct the refractive error optically—they may disregard it entirely—but in order to contract the pupil, and by so doing reduce the size of the diffusion image. Weakness of the sphincter of the iris is, therefore, an important factor in the production of asthenopia in hypermetropia. Constant contraction of the pupil can cause actual pain in the eye, especially in the presence of an unhealthy or partially atrophic iris.

I have in mind a group of patients, which I intend to discuss more fully at some later time, composed entirely of women who complain that after 10 or 15 minutes of close work the discomfort is so great that they simply must stop. This in spite of the fact that very careful testing will disclose that the glasses are correct, and the accommodation, convergence, and muscle balance are normal. If these persons are examined with the slit-lamp it will be found that they have an extremely low-grade uveitis—more or less endothelial dystrophy, a few corneal precipitates, sometimes a few cells in the aqueous, pigment absorption, and more or less atrophy of the iris. These women are nearly all in their late thirties or early forties, who give a history of premature or induced menopause or who have had some kind of operation on the uterus or ovaries.

The enlargement of the pupil associated with the relaxation of the accommodation is one of the reasons for the discomfort which hypermetropic persons experience

with their new correcting lenses. They must learn to depend for the distinctness of the retinal image on the correction of the optical error instead of the size of the diffusion images. It should be remembered that the wider pupil with correcting glasses also increases the luminous intensity, so that bright light might be somewhat dazzling at first; but this is compensated for by the added comfort of being able to read with an amount of light that is entirely inadequate without correction. We all know that one of the first complaints of hypermetropic subjects upon approaching the presbyopic age is that they are unable to read with poor light.

Theoretically, the treatment of hypermetropia with correcting glasses is a simple matter, but practically it is often a very serious problem that depends upon the knowledge, experience, and judgment, and sometimes the imagination, of the ophthalmologist.

Often we see patients who have reached 35 or 40 years of age with fairly high degrees of uncorrected hypermetropia, very little of which is manifest, and who have had no material discomfort. On the other hand many young persons undoubtedly suffer from the effects of comparatively low errors. We say that hypermetropia of 1.25 D. is ideal from the standpoint of usefulness. Nevertheless, all of us have relieved the distress of asthenopia in any number of young persons by partial or nearly full correction of such or even smaller errors. There is no satisfactory scientific reason for this. A healthy person with 9 or 10 D. of accommodation should be able easily to overcome 1 D. of hypermetropia, especially for his distance vision. Uncorrected, he will need to use 4 or 5 D. of accommodation for close work. This might be fatiguing, but he will never need more than 2 D. from infinity in to 1 meter, because the whole

range of accommodation from infinity in to 1 meter is less than 1 D. Still we find many young persons with low-grade hypermetropia who are actually uncomfortable unless they wear their glasses constantly for both far and near.

Of course compound hypermetropic astigmatism, however slight, may cause severe symptoms of asthenopia. In the correction of anisometropia, regardless of the type of ametropia, it is extremely important to determine the exact difference between the two eyes and to maintain the same difference between the two correcting lenses. Except in the presence of some pathology, the accommodation is almost exactly the same in the two eyes. Even a difference of .25 D. will interfere with comfortable binocular vision. The young anisometropic subject, one eye undercorrected, will ordinarily obtain distinct vision in only this eye at the same time. If he wishes to obtain clear vision in the other eye the undercorrected one must turn inward because of the added accommodation and associated convergence. In this case the patient is either compelled to fuse two images of unequal distinctness or suffer the consequences of a deviation of the visual lines. It is a serious mistake to prescribe a pair of lenses in which a different reduction or "cut" of the static findings is made for the two eyes. The proper modification of the static findings should be determined in the postcycloplegic examination. The postcycloplegic test is really a method of fogging, and in this, as in any fogging method, both eyes and not one at a time should be tested. Regardless of the type of ametropia, equal subtractions or additions must be placed before the two eyes at the same time. Besides the visual acuity with both eyes open, the muscle balance and accommodation should be determined at the postcycloplegic test and with the full static correction. The amount of modification or

"cut" should depend, not on fixed rules, but on the following factors: Age of patient, whether or not he has worn glasses, vision, occupation, accommodation, muscle balance, symptoms. All of these must be taken into consideration before a decision can be made. Finesse in refraction is possible of attainment only by the close combination of a knowledge of theory with careful clinical observation.

Even such rules as that a full or nearly full correction should be given with associated esophoria, and that a considerable reduction be made with exophoria, need not be strictly observed. Taking all things into consideration, it is often good practice to make a large reduction in esophoria or a nearly full correction in exophoria. We are often reminded that 6 meters is not infinity, it amounts to $1/6$ of a diopter of power, and that at least this amount should be allowed; which is perfectly true. It should, however, be stated also that the wider the pupil the greater the refraction at the periphery, and, when measured under cycloplegia, the increased refraction (because of the wide pupil) more than compensates for the power equivalent to the distance of the test object. The ophthalmologist need never fear that he will overcorrect the error if he prescribes the full cycloplegic findings. However, I never hesitate to cut plenty.

It is the duty of every prescriber of glasses to choose, from the great variety on the market, that lens which more nearly approaches the ideal for each individual case. The power is not the only thing to write in the prescription for glasses. Up to 6 D. a convex lens with a back surface of about -6 D. will answer every practical requirement of a so-called corrected lens for distance vision. For near vision about a -4 D. back surface is good. It is best in these lenses to have the back surfaces of a pair as nearly the same as pos-

sible. Ordinary toric lenses do not have constant back surfaces and, therefore, should not be used in powers above 1 D. Under 1 D. the stock toric lenses are sufficiently correct for practical purposes. The -6 D. back meniscus lenses are good. The upper part of the one-piece or ultex bifocal is ordinarily ground on a constant -6 D. spheric back-surface curve. The surface of the reading portion being necessarily weaker, these lenses nearly approach the ideal shape for both far and near in the ordinary powers. They are the bifocals of choice for weak distance powers of both denominations and for all powers of the convex.

Strong convex lens combinations should always be transposed to conform as nearly as possible to the finished spectacle lens before the subjective refraction is finished. For example, suppose the determination by the ordinary procedure is +5 D. sph. \approx +2 D. cyl. ax. 90°. Transposed, this lens can be written +7 D. sph. \approx -2 D. cyl. ax. 180°. Place the concave cylinder next to the eye in the trial frame and with the concave surface inside. The sphere is placed in front, convex surface in front (it is assumed that the trial lens is plano-convex). Now, since the effective power is different after the transposition, it will be necessary to determine this difference subjectively. If this is done the difference between the finished spectacle lens and the trial-lens combination will be negligible. This method is particularly useful and should always be carried out in cases of aphakia. Aphakics obtain much comfort from properly shaped lenses, and every effort should be made to prescribe the best form.

We should utilize the accessory effects of the correcting glass; for example, the farther away from the hypermetropic eye the weaker the correcting lens need be and the larger the size of the retinal image. This effect is, of course, greater in proportion to the degree of hypermetropia. Strong convex lenses, therefore, should be set as far away from the eye as possible. In this way, by increasing the size of the retinal image we can sometimes increase the visual acuity. In very high degrees of hypermetropia and in aphakia the smallest change will make a noticeable difference. It is well in these cases when the patient returns to have his glasses checked, to try the effect of pulling the finished spectacle glasses away or pushing them a millimeter or two closer to the eyes. If either change of position is an improvement, the optician should be asked to readjust the frames. We can always feel sure that a hypermetropic patient is not overcorrected if he continues to see clearly at a distance when the lenses are pulled away from his face.

Over and over again we see it stated that we should take as the expression of hypermetropia the strongest convex lens which adapts the eye to infinity. This rule should not be observed in patients under cycloplegia. The glass that gives the best visual acuity is the measure of the refraction. The most accurate method for the determination of the refraction of the eye is still the subjective method of Donders, by which the refraction is ascertained by that lens which produces the best visual acuity.

1930 Chestnut Street.

A STUDY OF OCULAR DEFECTS AMONG UNIVERSITY STUDENTS*

E. A. THACKER, M.S., M.D.

Urbana, Illinois

If we had a choice of retaining only one special sense, undoubtedly we should all prefer to have sight. Since we receive about 83 percent of our perceptions through vision, the loss of sight is a very grave handicap.

It has been deemed advisable to determine how many of our students in higher institutions of learning have defective vision; how many have such defects properly corrected in so far as that is possible. Another objective is to ascertain the causes of the abnormal vision.

PROCEDURE

The procedure followed in this investigation included the eye history, symptoms, external examination, and the examination of visual acuity by the Snellen Vision Chart of students upon their entrance to the university. Since this method is admittedly an incomplete test for visual defects, the author recognizes that there are present among the students cases of muscle imbalance and of fusion and other ocular disorders that cannot be determined by this type of examination. All students with defective vision were recalled for a recheck of their visual acuity. These students were asked to fill out the following questionnaire:

Name Age Class College
Underline symptoms which caused you to seek advice concerning your eyes: Headache, blurring of vision, squinting, watering, burning of eyes, twitching of lids, others
Name of person from whom you obtained examination for glasses
Address
Was he an oculist, optometrist, or general physician? (Underline)
For what reason were you told that you needed glasses?
Date glasses were first obtained
Date eyes were last examined
Were your lenses changed?
How often do you have eyes rechecked?
What symptoms of eyestrain, if any, do you have now?

The name of the person prescribing for the student was checked in the American Medical Association Directory. Each student's history was checked to determine past illnesses and the correlation of certain diseases with the time glasses were first obtained, in so far as this was possible. The same procedure was followed with the physical examination, recording and correlating any present diseased condition which might have some bearing on defective vision; such as, pathological tonsils, dental caries, and so on.

Students whose vision had become worse since their entrance into the university were checked for present foci of infection and also classified as to colleges, the number of years they had been in attendance at the university, and as to the type of scholastic work they were doing, in order to ascertain what effect excessive or prolonged use of the eyes might have on visual defects. The following information was obtained from the oculist who prescribed for the student:

Diagnosis of the student's ocular defect. Probable etiology.

Other members of the family with the same condition.

Was it possible to correct the vision to normal with glasses?

* From the University of Illinois Health Service.

TABLE 1
MALE STUDENTS WITH DEFECTIVE VISION IN THE UNIVERSITY

	Students Entered Fall—1937			Upperclassmen and Grad. Students			Totals		
	No.	Percent with defective vision	Percent of student body	No.	Percent with defective vision	Percent of student body	No.	Percent with defective vision	Percent of student body
Defective vision, no glasses	130	9.8	3.7	235*	11.8	3.8	365	10.98	3.77
Defective vision, uses glasses	1194			1763			2957		
Total number with defective vision	1324		37.7	1998		32.4	3322		34.3
Total number men students in University	3509			6156			9665		

* Estimated from examination of 1096 students with defective vision—130 not wearing glasses.

How often has it been necessary to change lenses?

Date of last examination.

RESULTS

Table 1 reveals that 37.7 percent of the entering students in the fall of 1937 had defective vision and that 32.4 percent of the upperclassmen did not have normal vision. Approximately 365, or 10.98 percent, of the students with defective vision were not wearing glasses—3.77 percent of the total male student body. Since the students with normal vision upon entrance to the university were not rechecked, these data probably give no information regarding many who

may have developed defective vision since entering school, and who have not reported to the Health Service. Nevertheless, the evidence obtained from this investigation reveals that 34.3 percent of the male student body have defective vision.

Out of the 1,838 students wearing glasses at the time of their physical examination upon entrance to the university, 526 or 28.5 percent had errors of refraction not corrected to normal by glasses (table 2). These results also revealed that 21.8 percent of the upperclassmen wearing glasses, who were checked at the Health Service, obtained their glasses after entrance to the uni-

TABLE 2
THE CORRECTION OF REFRACTIVE ERRORS BY USE OF GLASSES

	No. of Students	Percent	Total Examined
Entered with vision not corrected to normal with glasses (from records)	526	28.5	1838
Glasses obtained just before or at entrance to University (from questionnaire)	497	31.9	1556
Glasses obtained since entrance exam. Based only on upperclassmen and grad. students who are wearing glasses (from records and questionnaires)	211	21.8	966
Lenses changed at last examination by ophthalmologist or optometrist (questionnaire)	622	56.8	1095
Total with incorrect vision now wearing glasses (records and recheck at Health Service)	696	30.2	2302

TABLE 3

UPPERCLASSMEN WHOSE VISION WAS WORSE SINCE ENTRANCE INTO UNIVERSITY
CLASSIFIED AS TO COLLEGE

College	Students Wearing Glasses			Students Wearing No Glasses			Summary		
	No. Re-checked	No. Vis. Worse	Percent Worse	No. Re-checked	No. Vis. Worse	Percent Worse	No. Re-checked	No. Vis. Worse	Percent Worse
Agr.	80	18	22.5	16	2	12.5	96	20	20.8
L.A.S.	307	109	35.5	44	15	34.0	351	124	35.3
Eng.	202	74	36.6	26	12	46.1	228	86	37.7
Com.	207	78	37.6	22	13	59.0	229	91	39.7
F.A.A.	42	17	40.4	5	2	40.0	47	19	40.4
P.E.	15	9	60.0	7	2	28.5	22	11	50.0
Grad.	113	56	49.5	10	7	70.0	123	63	51.2
Total	966	366	37.8	130	53	40.7	1096	419	38.2

versity. There were 696 (30.2 percent) of the 2,302 students checked with glasses, whose vision was not corrected to normal with glasses.

It is interesting to note that 38.2 percent of the students having defective vision upon entrance to the university showed an increase in the error of refraction upon reexamination at the Health Service. These have been classified into colleges (table 3). The Graduate School, Physical Education, Fine and Applied Arts, Commerce, and Engineering Schools, respectively, showed the largest

percentage of students with increase in errors of refraction. The Colleges of Agriculture, Education, and Liberal Arts and Sciences had the fewest number of students with an increase in defective vision since entrance.

An attempt to ascertain the cause or causes for the progression of the refractive defect was made. Among 160 cases studied in which there was a marked change in visual acuity since entrance, 25 percent were honor students, 31.2 percent had a straight A average, 36.2 percent had a B average, and 26.2 percent had a C average (table 4). It is interesting to note that these honor students had no demonstrable foci of infection and gave no history of measles or scarlet fever. Only 4 percent and 3.3 percent of the A and B students, respectively, had foci of infection, whereas 38 percent and 30 percent, respectively, of the C and D students had foci of infection. If it is good logic to assume that grades made by a student are in proportion to the amount of studying done, this would indicate that visual defects of at least some of these students are aggravated by an excessive amount of eye work. This may be due to too long study periods, fine detailed and accurate work which one finds in the Fine and Applied Arts School or accountancy problems in the Commerce

TABLE 4

SCHOLASTIC STANDING—UPPERCLASSMEN AND GRADUATE STUDENTS WHOSE VISUAL DEFECT HAS INCREASED SINCE ENTRANCE TO THE UNIVERSITY

	No. of Students	Percent with Grades	Percent with Foci
Honors:			
Class and College	40	25.0	0.
Grade average "A"	50	31.2	4.0
Grade average "B"	58	36.2	3.3
Grade average "C"	42	26.2	38.0
Grade average "D"	10	6.2	30.0
Total	160		

TABLE 7

CHILDHOOD DISEASES AND DISORDERS—RELATIONSHIP OF COMMON DISEASES TO DEFECTIVE VISION

	No. Cases Students Def. Vis. Studied	Glasses 1 to 3 Yrs. after Disease	Percent Def. Vision Assoc. His. Dis.	No. Students in Univ.	No. Students Hist. of Disease	Percent Stud. University with Disease
Measles	1116	224	20		3135	32.4
Scarlet fever	196	54	30.6		621	6.4
Tonsils and adenoids	609	101	16.5		2081	20.4
Influenza	46	14	30.3		496	5.1
Whooping cough	543	20	3.6		1840	19.0
Mumps	409	36	8.8		1957	20.2
				9665		

cent had dental caries as compared to 45.4 percent whose vision has become worse. There is a wide range of difference between the percentage of students in the university with foci and the percentage of

disease to defective vision in this part of the investigation is not so accurate as is desirable. However, the plan followed included ascertaining the age at which the child had the disease, and if glasses were

TABLE 8

UPPERCLASSMEN—VISION WORSE: CLASSIFIED AS TO YEAR IN UNIVERSITY

	Wearing Glasses			Students No Glasses			Summary		
	No. Re- checked	No. Worse	Percent Worse	No. Re- checked	No. Worse	Percent Worse	No. Re- checked	No. Worse	Percent Worse
Graduate students	113	56	49.5	10	7	70.0	123	63	51.2
Class '38, 4th year	241	104	43.1	36	17	47.2	277	121	43.6
Class '39, 3d year	262	96	36.6	30	13	43.3	292	109	37.5
Class '40, 2d year	350	110	31.4	54	16	29.6	404	126	31.1
Total	966	366	37.8	130	53	40.7	1096	419	38.2

those with foci who have defective vision.

The common childhood type of diseases were also studied in an effort to ascertain any relationship to defective vision (table 7). The determination of the relation of

obtained in one to three years, that disease was considered to be the cause of the ocular defect, or at least a factor in aggravating an already existing condition. Since there are many children with heredi-

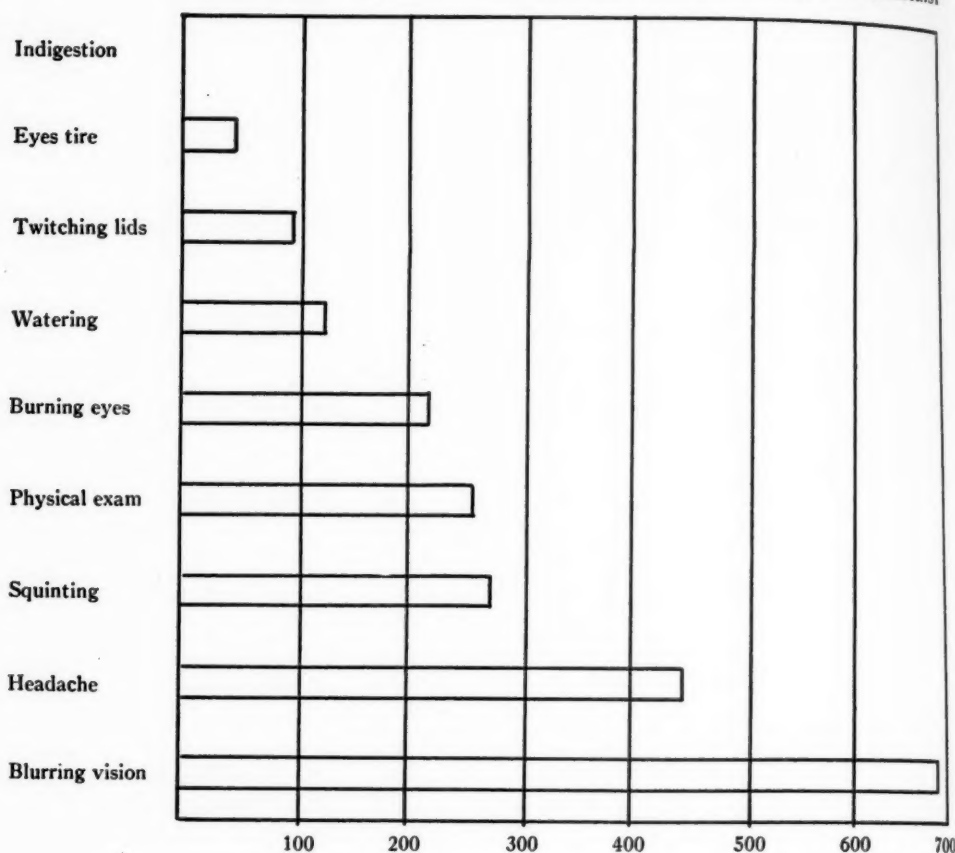
TABLE 9

HOW OFTEN SHOULD EYES BE RE-EXAMINED?
DATA COLLECTED FROM STUDENTS CONSULTING OPHTHALMOLOGISTS

	Lenses Changed	Lenses not Changed	Total	Percent Changed
Over 5 years since examination	6	2	8	75
Examined every 5 years	8	2	10	80
Examined every 4 years	14	3	17	82.3
Examined every 3 years	39	13	52	75
Examined every 2 years	90	35	125	72
Examined every year	84	55	139	60.4
Examined every 6 months	9	9	18	50
	250	119	369	67.7

TABLE 10

SYMPTOMS FOR WHICH 1686 STUDENTS CONSULTED OPHTHALMOLOGIST OR OPTOMETRIST



130 Upperclassmen with defective vision, no glasses; rechecked symptoms

83 No symptoms, or 63.8 percent

9 Headaches

14 Slight blurring of vision

tary or congenital ocular disorders which affect vision, and since some of these disorders are not recognized until some time after those children have started to school, one can realize how this method of attacking the problem is open to criticism. In fact, 134 out of 547 reports from the ophthalmologists stated that some other member of the family had the same type

of disorder as the student. Nevertheless, I am presenting it for what it may be worth. Scarlet fever led the group with 30.6 percent with defective vision associated with this disease, influenza 30.3 percent, measles 20 percent. Since the percentage of students in the university with a history of whooping cough and mumps was much greater than that associated

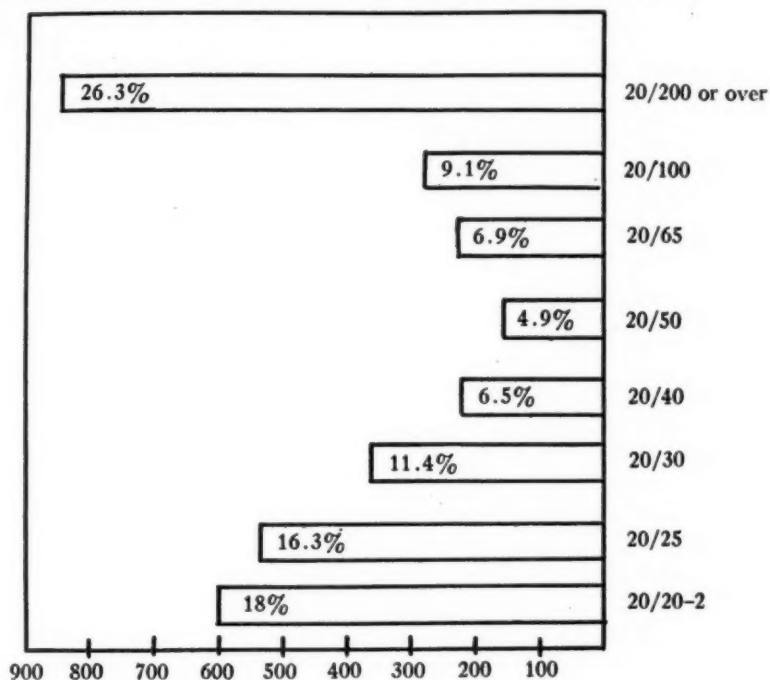
with defective vision, it was considered that no relationship existed between these diseases and defective vision.

Students with an increase in their visual defect were also classified as to the year in school. This gives us a comparative observation of students having abnormal vision (table 8). The visual defects of 21.1 percent of the second-year students became worse. The juniors, sen-

cent of the students examined yearly needed one or both lenses changed; 72 percent of those examined every two years had lenses changed. It is evident from tables 8 and 9 that students should have their vision rechecked regularly and certainly at not longer than one-year intervals. At present only 42.6 percent of the students have their eyes checked yearly or at shorter intervals.

TABLE 11

DISTRIBUTION OF ERROR OF REFRACTION UPON ENTRANCE TO THE UNIVERSITY



iors, and graduate students showed an increase in defective vision of 6 to 7 percent over the younger classes; the graduates topping the list with 51.2 percent of the students' vision becoming worse. Altogether, out of 1,096 students rechecked, 419 or 38.2 percent of these students' vision had become worse since their entrance to the university.

The data obtained from the ophthalmologists (table 9) shows that 60.4 per-

Subjective symptoms of so-called "eye-strain" are not accurate determiners of ocular disorders. Of the 130 upperclassmen with defective vision who were not wearing glasses, 83 had no symptoms, only 9 had occasional headache, and 13 had some blurring of vision (table 10). Fifteen percent of the students now wearing glasses were unaware of any defective vision until they were examined and advised of such a disorder by the Health

Service Staff. In their order of frequency, the most important symptoms that caused the students to consult an ophthalmologist or optometrist are: blurring of vision, headache, squinting, and burning of the eyes.

Classification of the errors of refraction according to the degree of defect was made. Students with marked errors of refraction, reducing vision to 20/200 or less, were far in the majority of the other defects with 26.3 percent (table 11).

An idea of the types of ocular disorders affecting vision may be obtained from the results of the questionnaire sent to the ophthalmologists (table 12). Simple myopia was the most frequent disorder with 27.2 percent. Others in order of frequency of occurrence were hyperopic astigmatism, myopic astigmatism, compound myopic astigmatism, simple hyperopia, and simple astigmatism. One hundred sixty students out of 1,556 rechecked (10.3 percent) had anisometropia.

The cost for the examination and glasses for students varied a great deal. Among the physicians, many of the very low prices were due to the financial status of the patient, or to the student's connection with families of other members of the medical profession. Perhaps the same

TABLE 12
DIAGNOSIS OF DEFECTIVE VISION

	Total Re-ported	No. with Defect	Per-cent
Simple myopia		149	27.2
Hyperopic astigmatism		111	20.2
Myopic astigmatism		89	16.2
Compound myopic astigmatism		60	10.9
Simple hyperopia		40	7.3
Simple astigmatism		33	6.0
Compound hyperopic astigmatism		15	2.7
Mixed astigmatism		13	2.3
Strabismus		10	1.8
Myopic hyperphoria		6	1.0
Amblyopia		6	1.0
Heterophoria		4	.7
Choroiditis		3	.5
Cataract		3	.5
Accom. asthenopia		2	.3
Retinitis pigmentosa		2	.3
Total reports from ophthalmologists	547		
Anisometropia	1556	160	10.3

is true of the reports from the optometrists. The average cost for examination and glasses was \$15.75. It is interesting to note how little difference there is between the charges made by the ophthalmologist and the optometrist (table 13).

SUMMARY

1. Of the male student body at the University of Illinois 34.3 percent have

TABLE 13
PRICES PAID FOR GLASSES AND OCULAR EXAMINATION BY STUDENTS

Visual Defect without Glasses	Oculist			Optometrist		
	No. Students	Av. Price for Exam. and Glasses	Variation Price	No. Students	Av. Price for Exam. and Glasses	Variation Price
20/20	133	\$16.45	\$ 6.50-25.00	137	\$15.08	\$ 5.00-27.00
20/25	89	15.75	7.50-30.00	121	14.17	7.00-34.00
20/30	48	15.77	8.00-27.00	63	15.32	7.50-38.00
20/40	32	16.00	10.00-16.50	38	14.28	8.00-20.00
20/50	30	16.40	10.00-25.00	19	13.42	10.00-17.00
20/65	32	17.57	9.00-30.00	54	15.46	7.00-23.00
20/100	71	17.50	6.00-41.00	59	14.72	8.00-25.00
20/200	139	17.00	7.50-35.00	157	16.00	7.00-45.00
Total	575	16.50		648	15.00	
Average for both Oculist and Optometrist		\$15.75				

defective vision as determined by the Snellen test.

2. Although it is admitted that the correction of muscle disorders may have necessitated some blurring at a distance, nevertheless the glasses of 30.2 percent of the students with defective vision did not correct the distance vision to normal.

3. The visual acuity of 38.2 percent of the students with defective vision became worse since their entrance to the university. Of the sophomores, juniors, seniors, and graduate students, respectively, 31.1, 37.5, 43.6, and 51.2 percent showed an increase in their visual defect.

4. The greatest percentage of students with an increase in visual defect since entrance occurred in the Graduate School, the Physical Education, Fine and Applied Arts, Commerce, and Engineering Colleges, respectively.

5. Evidence is produced showing that excessive use of the eyes is definitely a factor in aggravating an existing visual defect.

6. Foci of infection in many cases cause abnormal vision or aggravate an already existing condition.

7. The relationship of some of the common childhood diseases to ocular disorders is discussed.

8. All students with defective vision should seek consultation concerning their eyes once yearly.

9. Symptoms produced by errors of refraction are discussed. Many times defective vision is present without producing any recognizable subjective symptoms. Fifteen percent of the students with errors of refraction had no symptoms.

10. The errors of refraction are classified according to the degree of defect.

11. The types of ocular disorders affecting vision are tabulated.

12. The cost of examination and glasses averaged \$15.75, although there is quite a large range in costs. There was very little difference between the average charges made by the ophthalmologist and optometrist (not more than 10 percent).

OLIGOSEPTIC TREATMENT OF OCULAR INFECTION

LEO I. HALLAY, M.D.

McClure, Virginia

The term "oligosepsis" was introduced¹ to designate any chemotherapy directed against the virulence of pathogenic microorganisms—primarily bacteria—to reduce their infectious capacity without necessarily destroying them. It was based upon the results of experiments by Much² that harmless parasites can be made extremely virulent by treatment with acids, and upon my own experience³ that in actual infection, pathogenic microorganisms can be rendered harmless by restoring the acid-base balance in the infected area. This appeared to be possible: (a) by hydrotherapeutic procedures designed to produce sweating; (b) by anti-ketogenic diet; (c) by application of powdered sodium bicarbonate or of soap lather as buffers in infections of the skin; (d) by application of protein buffers in infections of mucous membranes. My own experience has shown that oligosepsis thus produced is the most harmless and the most proficient means of treating acute infections.

Further development of these ideas has led me to the evaluation of the buffer properties of soap lather in the oligoseptic treatment of ocular infections. The present knowledge of the chemical properties of soap is given in the fourth edition of the "Ullman'sche Enzyklopaedie der technischen Chemie." As this source states, "Due to the fact that the fatty acids are very weak acids which dissolve in water into very foamy solutions, only a slight amount of electrolysis takes place. These solutions belong to the so-called colloidal electrolytes. The cation of the solution is the ion of the alkali metal; the anions are not only the simple fatty acids, but also a compound formation with a high electrical charge and formed by a considerable

amount of undissolved soap molecules. Simple fatty acid anions could be elicited in weaker solutions; however, in $n/2$ solutions only colloidal electrolytes can be found. An increase of the concentration converts even the undissolved soap completely into the colloidal form. This compound formation of ion micelle (McBain) is highly soluble. However, this solubility decreases with the increase of the concentration, which then results in an increase in the conductivity. Contrary to previous statements, very little electrolysis can be elicited in soap solutions, and the OH-ion concentration is formed only in solutions between $n/3,000$ and $n/300$; it is strongest in the salts of the high molecular fatty acids. The concentration of alkali ions in soap solutions is so weak that, according to the most recent investigations, the alkali action of soap when used for washing can be entirely ignored."

This infinitesimal degree of soap-solution ionization seems to explain the buffer action of soap when applied to infected areas of the skin; it also seems to explain the obvious bufferlike action of soap lather in wet media, especially in the eye.

When, in the winter of 1937, I had a traumatic injury of the cornea of the right eye and of the eyeball, associated with subconjunctival bleeding and a very extensive reactive conjunctivitis, I decided to try out both the oligoseptic and antiphlogistic action of soap lather. As was to be anticipated, the application of soap to the eye caused a considerable increase of the pain due to trauma. However, this eased after several minutes, and I then realized that my right eye, which had been closed since the previous day, had opened spontaneously. There was a marked in-

crease of the injection of the conjunctival capillaries; however, this was not the flaming redness of an inflammation, but rather the livid redness of an irritation. After about half an hour this livid redness disappeared, leaving a bright-red spot at the cornea due to the subconjunctival bleeding. The treatment was repeated the next morning, and it resulted in a complete recovery. Since that time I have had the opportunity of corroborating this experience in numerous industrial accidents, always with the same result.

The next step was to ascertain whether conjunctivitis or keratitis due to infection could be influenced in the same way. Several cases of simple acute conjunctivitis or keratitis have therefore been subjected by me to oligoseptic treatment with soap buffer, resulting, without exception, in complete recovery. A beginning conjunctivitis would clear up in about half an hour, and no pathological symptoms could be observed afterwards. However, in cases in which the infection had persisted for more than a day, the objective symptoms could not be relieved by a single treatment, but a daily application for several days was necessary. The prodromal conjunctivitis of measles seemed to clear up temporarily after soap-lather application; however, no influence on the progress of measles could be observed: the exanthema appeared according to schedule. In January, 1939, there was an epidemic of acute contagious conjunctivitis in McClure, Virginia; 32 cases were observed, and almost all of them were treated by oligosepsis. Beginning cases could be checked by a single treatment; the more advanced cases had to be treated for two to four days. The same progress was observed in several cases of blepharoconjunctivitis, which, as is known, is a very stubborn condition. Even this affection, according to my own observation, responded favorably and was sometimes

cured by systematic treatment with the buffer colloid.

In cases of foreign body in the conjunctiva or cornea, the foreign body was removed under aseptic conditions and treatment with soap lather applied. The reaction of hordeola to oligosepsis depended upon the stage of their development. In the beginning stage they could be checked by a single application; abscessed hordeola had to be punctured and the pus removed before the application of soap lather to check the infection. Recurrences could be prevented by systematic cleansing of the lids and of the conjunctival sac with soap, especially when itching appeared. Two cases of dacryocystitis reacted favorably.

A considerable stubbornness was exhibited in a case of ophthalmia neonatorum which involved a premature, underdeveloped, and considerably undernourished baby girl, born on January 31, 1938, and first seen by me on February 22, 1938. The accoucheur, according to the parents' statement, had neglected to apply the Credé treatment at birth, and a marked ophthalmoblennorrhoea had been present since the third day postpartum. The baby was cyanotic; both conjunctival sacs were filled with pus, which had closed the eyelids. The infant resisted every attempt to open her eyes.

Both eyes were washed out with soap and water and then the soap buffer was applied, which, as might be expected, caused a considerable amount of pain. However, after several minutes, the baby opened her eyes and kept them open for several hours, her face expressing satisfaction. This probably indicated that the subjective symptoms of the conjunctival irritation had been promptly removed by the treatment. Several hours later the secretion of pus began again, and the baby was found next morning with both eyes tightly closed again, the conjunctival

sacs and the canthi containing pus. Oligoseptic treatment was repeated each morning for six weeks, and resulted in complete recovery of the patient with no remaining injury to the eyes.

The results in every case seem to prove that oligosepsis in the form of local appli-

cation of soap-lather buffer to infected eyes is the most harmless and apparently the most proficient way of treating acute infections of the eye. It can be successfully applied in chronic infections, and seems to be helpful even in cases of ophthalmia neonatorum.

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PROPHYLACTIC FOREIGN-PROTEIN THERAPY IN CATARACT EXTRACTION*

C. A. NOE, M.D.

Cedar Rapids, Iowa

Recently Brown,¹ who has investigated the possible mechanism of parenteral foreign-protein therapy by rabbit experimentation, advocated the intravenous use of typhoid-H antigen (Lilly) in cataract extraction as a prophylactic measure against postoperative inflammation. According to this author an appreciable (1:100) blood titer of antibodies should be built up before the anterior chamber of the eye is opened, in order that the treatment may be effective. By injecting the flagellar "H" antigen of 15 million typhoid organisms intravenously Brown obtained blood typhoid antibody titers of 1:100+ within 48 to 50 hours after the injection.

In order to determine the effects of foreign-protein therapy on postoperative ocular inflammations, a group of 150 patients was studied at the University Hospital Eye Clinic at Iowa City before and after operation for senile cataract. It was believed that with a sufficiently large series and a fairly standard operative trauma some conclusions might be drawn.

The foreign-protein substances used were omnadin, made by Winthrop Chemical Company, and typhoid-H antigen, prepared by Lilly and Company. Omnadin is a "sterile solution composed of protein substances obtained from nonpathogenic bacteria (*Sarcina* and *B. mycoides*), various animal fats, and lipoids derived from bile," according to the pamphlet distributed by the Winthrop Chemical Company. Typhoid-H antigen is prepared by Lilly and Company, by adding 0.1 percent to 0.2-percent formalin or 0.5-percent phenol to a broth culture or saline suspension of a motile strain of *B. typhosus*. Supposedly the action of the "H" antigen is not inhibited by phenol or formalin but that of the "O" antigen is blocked by the process of preparation.

Fifty patients received no foreign-protein therapy; 50 received four consecutive daily intramuscular injections of 2 c.c. of omnadin; and the remaining 50 received four intravenous injections of typhoid-H antigen, each made from 15 million organisms. Because patients could not be hospitalized sooner, the first injection was made 24 hours before operation.

* From the Department of Ophthalmology, College of Medicine, State University of Iowa.

TABLE 1
AVERAGE POSTOPERATIVE CILIARY INJECTION

Days P.O.	1	2	3	4	5	6	7	8	9	10	11	12
Typhoid-H anti-gen.....	1.28	1.12	1.14	1.15	1.18	1.18	1.11	1.12	1.06	.98	.87	.79
Omnadin.....	1.31	1.56	1.64	1.82	1.85	1.77	1.72	1.68	1.63	1.51	1.40	1.33
No foreign protein.	1.40	1.53	1.60	1.54	1.57	1.52	1.49	1.34	1.15	1.20	1.18	1.02
Average.....	1.33	1.47	1.46	1.50	1.53	1.49	1.44	1.38	1.28	1.23	1.15	1.05

According to Brown it should have been given at least 24 hours earlier.

Patients in each of the three groups were observed simultaneously so that seasonal influences were eliminated. The average age of each group was approximately the same. Seventy-four percent of the group which received no foreign protein were operated on by the intracapsular method of extraction, as were 70 percent of the omnadin group, and 66 percent of the typhoid-H-antigen group. One must presume that the operative trauma was similar in the three groups. All cases had clinically normal conjunctivae preoperatively, and conjunctival cultures showed no pathogenic organisms. Patients with complications such as previous ocular inflammations, anterior-chamber hemorrhage, and loss of vitreous, were not included in the series.

The eyes were inspected daily for 12 days after operation, and the amount of ciliary injection carefully noted. This was estimated as one to four plus, using colored drawings as a measuring stick. The average daily redness is shown in table 1.

It is noted that the omnadin group showed the greatest reaction, with the control group showing but slightly less. The typhoid group falls definitely below

the average of the other two. In the 150 cases there were 12 which needed further foreign-protein therapy for a secondary iritis on about the ninth day after operation. Of these only two occurred in the group receiving typhoid-H antigen, six in the omnadin group, and four in the control group. It appears then that the postoperative reaction and inflammation were lessened in those who received the typhoid-H antigen. However, in the typhoid group there were two deaths, one from broncho-pneumonia, and one from a cerebral vascular accident. Also two of this group had coronary-artery occlusion causing partial heart block, with eventual recovery. Nine patients in the same group showed such mental confusion that they seriously endangered their eyes by their misbehavior. Such untoward complications were not encountered in the other two groups aside from one patient who had marked mental confusion.

It has been generally recognized that parenteral foreign-protein administration gives rise to the following bodily reactions:

1. Temperature elevation.
2. Leucocytosis.
3. Occasional increase in the serum complement.

TABLE 2
TEMPERATURE FOLLOWING TYPHOID-H-ANTIGEN INJECTIONS

	1st injection	2d	3d	4th
Highest.....	103°F.	103.5°F.	102.8°F.	104°F.
Lowest.....	98°F.	98.5°F.	98°F.	98°F.
Average.....	99.9°F.	100.4°F.	100.4°F.	99.8°F.

TABLE 3
DATA SHOWING SPECIFIC ANTIBODY RESPONSE TO INJECTIONS OF TYPHOID-H ANTIGEN

Age	Injections	Antibody	Before injection	1st day	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th
75	4 every 24 hrs.	O	0	0	0	0	0	0	0	0	5	10	40	40	80	80	
62	4 every 24 hrs.	H	0	0	0	0	0	0	0	0	5	10	40	40	80	80	
80	4 every 24 hrs.	O	0	0	0	0	0	20	160	320	640	1280	1280	1280	1280	1280	
56	4 every 24 hrs.	H	0	0	0	0	0	0	0	0	5	40	160	320	640	640	
75	4 every 24 hrs.	O	0	0	0	0	0	0	10	10	20	40	40	40	40	40	40
70	4 every 24 hrs.	H	0	0	0	0	0	0	0	0	0	10	20	40	40	80	80
61	4 every 48 hrs.	O	0	0	0	0	5	5	10	20	40	40	40	80	80	160	160
70	4 every 48 hrs.	H	0	0	0	0	0	0	0	0	0	0	0	5	10	40	80
47	4 every 48 hrs.	O	5	5	5	10	10	20	80	1280	1280	1280	2560	2560	2560	320	320
73	4 every 48 hrs.	H	0	0	0	5	5	5	80	80	320	640	640	640	1280	1280	
69	4 every 48 hrs.	O	0	0	0	5	5	10	40	640	2560	2560	2560	2560	2560	2560	
59	4 every 24 hrs.	H	0	0	0	0	0	0	20	2560	2560	2560	2560	640	1280	1280	
68	4 every 24 hrs.	O	0	0	0	0	0	0	20	2560	2560	2560	2560	640	1280	1280	
67	4 every 24 hrs.	H	10	10	10	10	10	40	160	2560	2560	320	640	640	640	640	

The numbers represent the times dilution of the patient's serum in which macroscopic agglutination was seen.

4. Increased, followed by decreased, capillary permeability.
5. Specific and nonspecific antibody formation.

Only the first and last of these reactions were studied in the patients observed. Temperature records were kept on all cases. The omnadin and control groups showed no rise in temperature. In the typhoid-H-antigen group a definite temperature response was observed, the peak coming usually from four to eight hours after the injection. Rarely was this fever accompanied by a chill. Table 2 shows the highest, lowest, and average oral temperature after each injection.

The specific antibody response in the blood was studied in 14 of the group receiving typhoid-H antigen. Control venous-blood specimens were drawn before the injections were begun, and then daily specimens at about 9 a.m. After clotting, the blood was centrifuged, and the serum was withdrawn not more than three hours later. The standard dilution and incubation technique employed by the Iowa State Hygienic Laboratory was followed, using the 900 million organisms per cubic centimeter of antigen, both "O" and "H," prepared by this laboratory. As can be seen from table 3, no appreciable titer was obtained until about the fifth day after the beginning of the injections, and the maximum usually not before the ninth day. The "O" agglutinins usually rose somewhat more rapidly than the "H." There was no history of typhoid fever or immunization against this disease in any of the cases. Five received typhoid-H-antigen injections every 48 hours to avoid a

possible negative-phase reaction, but no difference in the rise in titer was observed. There was no definite observable relation between the antibody titer and the redness of the eye.

Table 3 gives the age of the patients, the interval between the injections of "H" antigen, and the "O" and "H" agglutinin titer of the patient's serum before and after these injections.

According to Brown's² theory the beneficial effects of parenteral foreign-protein therapy in nonspecific uveitis occur because of the production of blood antibodies which, on opening the anterior chamber, appear in the aqueous and interfere with the reaction of the exciting antigen and the waiting antibodies in the sensitized eye. If this is correct, it would seem likely that if the inflammation after cataract extraction is lessened by foreign-protein therapy it is similar in nature to nonspecific uveitis.

CONCLUSIONS

1. Prophylactic intravenous administration of typhoid-H antigen (Lilly) apparently lessens the inflammatory reaction after cataract extraction, and gives rise to both "O" and "H" antibodies in the blood.
2. There seems to be no definite relationship between blood-antibody titer and postoperative reaction.
3. Omnadin (Winthrop) produced no change in postoperative reaction from the control series.
4. Typhoid-H antigen (Lilly) must be used with great caution in old people with pathologic vascular systems.

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NOTES, CASES, INSTRUMENTS

MOSQUITO LID-CLAMP RETRACTORS*

RAMON CASTROVIEJO, M.D.
New York

In operations upon patients with corneal opacities due to trauma, especially those from chemical burns, many cases are found in which a speculum cannot be used on account of pronounced symblepharon. In such instances, the author had been using, instead of a speculum, sutures inserted into the eyelids near their margins. Generally one suture, inserted in the center of each lid, was sufficient. This type of suture had also been used by the author for cataract extraction in order to avoid pressure upon the globe. Sutures present certain disadvantages: (1) they are painful to insert and (2) occasionally they produce hematomas which, although very seldom severe, may increase the risk of infection as well as give the patient a temporary disfigurement. If the traction exerted upon the suture is greater than the resistance of the skin and subcutaneous tissues into which they are inserted, the sutures may tear loose, sometimes at a most inopportune moment in the surgical procedure.

For certain operative procedures the speculum, either when actuated by a spring or set with thumb screws, limits the free use of surgical instruments.

To avoid the disadvantages of the sutures or speculum, the author has been using with satisfactory results small retractors clamped to the lids, designed to give the maximum possible exposure of the palpebral aperture with minimum interference in the operative field. On account of their small size, these instru-

ments have been named Mosquito Lid-Clamp Retractors. These retractors are essentially a pair of small metal clamps in the shape of a letter U. Their length is about 5 mm., and their width 3 mm., with a space between the two arms just sufficient to permit the eyelid to be inserted.

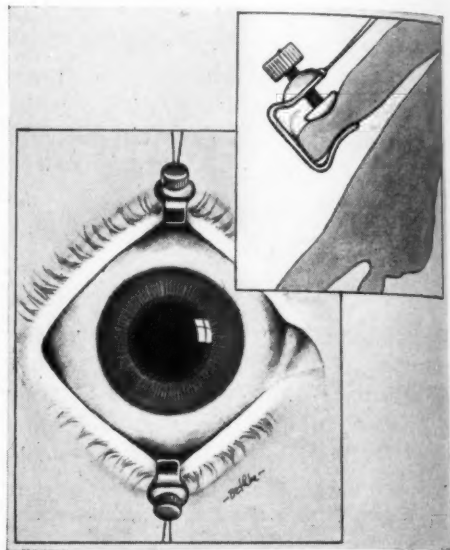


Fig. 1 (Castroviejo). Mosquito lid-clamp retractors. Front and profile views.

A slight extra bend at the base gives additional space for the lid margin (fig. 1).

One of the arms carries a small clamping screw with a knurled head. A few turns serve to clamp the lid firmly in place between one arm of the U and a rounded plate fixed to the end of the screw. When withdrawn, this plate fits into a recess in the arm, so as to offer no obstacle to easy insertion or removal of the lid margin. When the clamp is fixed in position, a thread passing through an eyelet in the flange serves to exert traction, thus retracting the lid. The thread is securely fastened to the towels surrounding the

*From the Institute of Ophthalmology of the Columbia Presbyterian Medical Center.

operative field by means of hemostatic forceps. The direction of pull is arranged so as to relieve the globe of any pressure due to the lids, either centrally or at the canthi. The retractors are chromium plated, and can be easily sterilized.

For operations that do not require opening of the globe, two retractors, one

tures, since they serve the same purpose, are more reliable, and do not traumatize the tissues. (3) They prevent lid pressure upon the eyeball, which is difficult to avoid with other types of speculum, especially at the outer canthus, without resorting to external canthotomy.

I wish to express my appreciation to Mr. Larkin and V. Mueller & Co. for their coöperation in making the instrument herein described.

635 West One Hundred Sixty-Fifth Street.

CHRONIC ORBITAL OSTEOMYELITIS CAUSED BY TYPHOID BACILLUS*

EUGENE M. BLAKE, M.D., AND

DAVID MASON, M.D.

New Haven, Connecticut

Although most cases of osteomyelitis are caused by the Staphylococcus or Streptococcus, other pus-forming organisms are sometimes responsible for bone lesions. According to Winslow,¹ 0.85 percent of all cases of typhoid fever give rise to metastatic bone involvement, 0.45 percent of all cases of osteomyelitis being a complication of typhoid fever. In a review of 18,840 cases of typhoid fever and 700 cases of osteomyelitis, Keith and Keith² found approximately the same incidence, 0.87 percent and 0.43 percent, respectively. The evidence of bone infection may first appear years after the attack of typhoid.

As long ago as 1835 Maissonneuve³ recognized osteomyelitis as a complication of typhoid fever, and in 1889 Ebermaier⁴ isolated the typhoid bacillus from a bone lesion, thereby definitely establishing the dependence of the osseous focus upon the initial disease. Almost every bone of the

*From the Department of Surgery, Section of Ophthalmology, School of Medicine, Yale University.

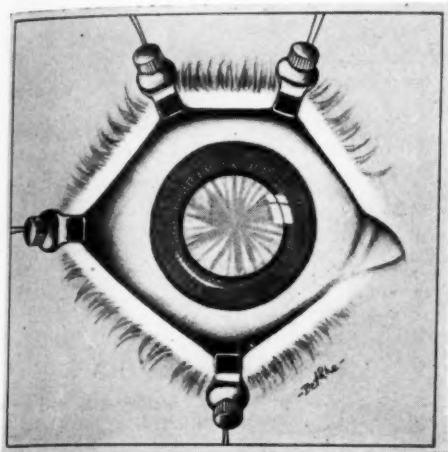


Fig. 2 (Castroviejo). Mosquito lid-clamp retractors. Method of use for intraocular operations.

for each eyelid, are generally sufficient (fig. 2). For operations in which the eyeball is to be entered, with the subsequent danger of prolapse of intraocular structures (such as in cataract operation, corneal transplantation, staphylectomies), the use of four retractors produces a maximum opening of the palpebral fissure without lid pressure upon the globe. The retractor placed at the outer canthus is particularly useful, since it usually eliminates the necessity for performing an external canthotomy.

The main advantages found by the author in the use of these mosquito lid-clamp retractors over other means of opening the palpebral fissure, are: (1) They may be used in cases of symblepharon, when a speculum cannot be inserted. (2) They are superior to the su-

skeleton has been affected by the typhoid bacillus, the most frequent sites being the ribs, the tibia, and the spine, possibly because of exposure to trauma. According to Hertzler⁵ the typhoid bacillus has a predilection for sites not commonly attacked by the Staphylococcus, notably the spine and ribs. Reddening of the skin over the site of the bone lesion is more frequent than in other types of osteomyelitis.

Typhoid osteomyelitis of the orbital region occurs with such rarity that one may easily overlook the possibility of this association with a previous typhoid infection. Klemm⁶ reported two cases of osteomyelitis of the floor of the orbit following typhoid, from which the colon and *Bacillus typhosus* were cultivated. Cooperman and Leventhal⁷ described two cases of involvement of the zygoma, and Gore⁸ reported three cases of typhoid periostitis of the frontal bone.

The bone lesion is generally surrounded by practically normal bone with little evidence of reactive proliferation, and there is little tendency to spreading unless secondary infection occurs. The disease cavity is small and usually lined with granulation tissue, with free reddish fluid in the center. Typhoid bacilli from bone lesions have been found viable as long as 13 years after recovery from the disease.⁹

The following case is related because, like the seven mentioned above, it is typical of typhoid osteomyelitis. It presented no febrile periods, was chronic in course, and there was a history of previous typhoid infection. Here, also, the typhoid bacillus was found in the bone lesion several years after the patient's recovery from the general infection.

Case Report. H. J., aged 21 years, a white male, entered the New Haven Hospital on October 29, 1938, because of a marked swelling of the tissues below the outer angle of the right eye and a discharging sinus. The latter had been pres-

ent for two years. The patient had had typhoid fever in 1929, and was confined to bed for seven weeks. Except for this the past history was irrelevant. In March, 1938, a surgeon in an adjacent city had incised the swollen tissues of the right infraorbital region to drain the infected area, but swelling had recurred about every two months. In all, there had been eight exacerbations of the swelling.

The *physical examination* was negative except for a markedly swollen area over the outer portion of the right infraorbital region. There was a small fistulous opening in this area which was draining a thick yellowish pus. The bony ridge of the orbital margin was indurated, and an exostotic elevation was palpable. The white blood cell count was 9,000, 61 percent polymorphonuclears. The cultured urine grew a *Streptococcus viridans*, *Staphylococcus albus*, and unidentified gram-negative rods. The latter did not agglutinate typhoid bacilli. The blood Widal test was positive in 1:40 dilution, showing a mild infection with typhoid. Stool cultures showed no white colonies on endomedium. The blood Wassermann test was negative. An X-ray study of the orbit gave negative findings, although there was evidence of infection of the right maxillary antrum and ethmoid cells, but no clinical signs of involvement of these cavities had been found on examination.

A culture from the fistula taken on the day of admission showed *B. typhosus* and *Staphylococcus aureus*. There was agglutination for typhoid in dilution of 1:1280. A previous culture, taken on October 19th, showed some agglutination in 1:1280, and the following fermentation and morphological appearance typical of the typhoid bacillus:

Lactose — Xylose +2 Motility +
Dextrose — Levulose +3 Indole —

Maltose + Arabinose — Lead acetate +
Mannite + Ruffinose — Russell base +

Hot boric-acid compresses were applied, and on the third day after admission a longitudinal incision was made through the soft tissues down to the bone. There was elevation of the periosteum and thickening of the bone. The sinus tissue was excised, and the diseased bone curetted out. The wound was closed by silk sutures, and a small drain left in place. Cultures taken at this time showed *Staphylococcus aureus* and nonhemolytic streptococcus.

The *pathological report* of the tissue removed was as follows: Masses of dense fibrous tissue contain numerous small blood vessels and are moderately infiltrated with lymphocytes and neutrophils. The major portion of the tissue was composed of unrecognizable necrotic, pinkish-staining material.

Persistent bone fistula with a history of previous typhoid fever should suggest the possibility of a typhoid osteomyelitis. Where free drainage exists, the original typhoid infection should be crowded out by the common pyogenic cocci.^{10, 11} The bacilli occur frequently in the bone mar-

row¹² and have been demonstrated there months after recovery.¹³ Bone infection is only an incident in typhoid bacteremia, so that the patient with osteomyelitis is not considered a carrier. When a bone lesion develops, the sinus must be totally excised or continuous symptoms will persist.^{14, 15} Good results have been reported from the use of vaccine therapy as an adjunct to surgery. Following the World War, Webb¹² reported that in 821 cases in which typhoid vaccination had been given, 12 percent developed bone lesions; whereas, of 297 patients not inoculated, 31 percent had bone lesions.

As points of differential diagnosis it is to be noted that osteomyelitis due to the *Staphylococcus* causes an acute bone destruction that is apt to be extensive. The typhoid bacillus induces a chronic and less destructive lesion. Syphilitic periostitis can be easily recognized in the roentgenogram and is accompanied by positive blood serum. Tuberculosis causes a widespread, destructive, chronic lesion.¹⁶

The authors wish to express their appreciation to Dr. T. L. Hale and Miss F. R. Fox of the Department of Surgical Bacteriology of New Haven Hospital for their valuable coöperation.

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CONGENITAL FISTULA OF THE
LACRIMAL SACJOSEPH LAVAL, M.D.
New York

In the American Journal of Ophthalmology for September, 1929 (volume 12, number 9, pages 745—Levine), there appears my report of a case of this type in which the operative result was unsatisfactory. Since then I have seen no case of this type until May, 1938, nor have I read of any reports on this condition in the American ophthalmic literature of more recent date than 1921.

This condition must be comparatively rare, judging by the paucity of reports and also by the fact that in 12 years of private practice and ophthalmic service at Mt. Sinai Hospital and Manhattan Eye, Ear, and Throat Hospital I personally have seen only two cases. This, however, does not mean that none was seen by any of the other attending ophthalmologists. The published reports are very vague about the operative procedure, as was mentioned in my article in 1929, and for that reason I wish now to report the procedure that was used with a successful result. Unfortunately, I have been unable to follow up my first patient to carry out any further operative procedure.

My second case was seen at Dr. Fletcher's clinic at the Manhattan Eye, Ear, and Throat Hospital. M. C., a girl four years of age, had had tearing since birth from a small opening in the skin on the right side of the nose near the eye, according to the mother's statement. There was no history of infection or injury, no treatment was ever instituted, and this was the first time that advice had been sought.

On examination a small fistulous opening was seen in the skin in the region of the right lacrimal sac and clear lacrimal fluid rolled thence down the side of the

nose and cheek. The lacrimal puncta on both sides were normal in size and position. There was no epiphora on the left side, and the tearing on the right side was only from the fistulous opening and not from the conjunctival sac. There was no evidence of inflammation nor was there any tenderness on palpation.

Operation was performed under general anesthesia without the use of avertin because of the age of the patient. A lacrimal probe was inserted through the fistulous opening along the tract into the lacrimal sac until it met firm resistance. Another probe was passed through the inferior canaliculus into the lacrimal sac and naso-lacrimal canal without difficulty. The latter probe was then removed. An incision was made in the skin on the side of the nose immediately over the probe which lay in the fistulous tract. The incision went through skin and subcutaneous tissue and stopped short of exposing the probe. The skin and subcutaneous tissues were undermined for a short distance enlarging the field of exposure. Dissection with a blunt scissors was then carried out from all sides around the tract with the probe in it. The incision in the region of the fistulous opening in the skin was completed with scissors so as to encircle the hole entirely with a tiny border of skin. Leaving the probe *in situ* but pulling upward on it, the entire length of the fistulous tract was easily exposed to view. With blunt scissors, starting at the fistulous opening in the skin, the tract was completely freed on its under surface up to the lacrimal sac. Here it was cut off from its connection to the sac and removed together with the probe which it ensheathed. The operative area was swabbed with tincture of iodine and then with alcohol. Interrupted silk sutures were used to approximate the skin edges and a pressure dressing was applied.

Healing was entirely uneventful and

there was no reaction. The sutures were removed on the fifth postoperative day and no epiphora was present. Today after six months there has been no recurrence of the fistulous tract and there has been no epiphora figure 1.



Fig. 1 (Laval). Site of operation.

COMMENT

Boyd, in his case presentation in 1915, advised the use of the actual cautery, as did Weidler in 1918. The latter, however, admitted it was only partially successful in his own case but did quote Tyson as finding it satisfactory in one of his patients. The other method advocated by Weidler was to dissect the margin of the fistulous opening with scissors and then to bring the edges together with a purse-string suture. This, we can be sure from a study of the histology of the tract, would be quite useless. Harman in 1903 did not even mention an operative procedure. Nor did Löhlein in 1908 operate, but performed a biopsy of some of the tract to study its pathology. Erggelet in 1929 presented two cases but did not operate. Cosmettatos in 1906 discussed the condition and in 1933 successfully extirpated the tract and studied it micro-

scopically. He found, in agreement with Löhlein, that the epithelium of the skin is continuous with the epithelial lining of the tract at its external opening but becomes less stratified as it continues farther towards the lacrimal sac, where it tends to have more columnar cells. He found no evidence of inflammation. The underlying tissue consisted of connective-tissue fibers with occasional blood vessels. I found substantially the same in my case, as is shown in figure 2, and the lumen of the tract is seen to be entirely patent. No evidence of inflammation is seen and the stratified squamous epithelium has basal columnar cells. The destruction of all



Fig. 2 (Laval). Photomicrograph of fistulous tract.

these cells in the entire length of the tract by chemicals such as trichloroacetic acid or by the actual cautery does not seem feasible. Accordingly, the best procedure is to remove the entire fistulous tract *in toto* surgically, and this is easily done in the manner outlined.

136 East Sixty-Fourth Street.

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SOCIETY PROCEEDINGS

Edited by DR. H. ROMMEL HILDRETH

NEW YORK SOCIETY FOR CLINICAL OPHTHALMOLOGY

November 7, 1938

DR. PERCY FRIDENBERG, *president*

SYMPOSIUM ON OPHTHALMIC ENDOCRINOLOGY

DR. D. ROLETT gave an instructional hour on the biomicroscopy of the eye.

DR. ROBERT FRANK spoke on endocrinology of today. In ophthalmology one must frequently resort to endocrinological investigation. The speaker then gave the physiological functions of the individual glands and their interrelationship. He described various gland dysfunctions, covering the pituitary, thyroid, adrenals, pancreas, and gonads. He mentioned congenital cataract under thyroid disease. Very few glandular extracts are of proved value therapeutically except thyroid, adrenalin, pituitrin, and insulin.

DR. WALTER TIMME touched upon pituitary disturbance, stating that oral feeding with this gland is ineffectual.

DR. PERCY FRIDENBERG discussed the ocular symptoms in endocrine disturbances. Pituitary and thyroid disturbance and their relation to ocular symptoms have been well studied, and are described as classical pictures. Parathyroid insufficiency with lens changes can be detected early with the slitlamp and treated with irradiated ergosterol. Diabetic cataract may be pancreatic in origin. Marfan's disease is of interest with its skeletal pathology and lens dislocation. In the Lawrence-Moon-Biedl syndrome we find retinitis pigmentosa. Other disturbances of interest are Hand-Christian-Schüller disease, nevus flammeus with glaucoma,

corneal dystrophies, keratoconus, and so forth.

DR. DAVID MARINE spoke on his study of exophthalmos. The latter may be seen in other conditions; such as leukemia and acromegaly. Proptosis can be induced in animal experimentation.

DR. RALPH LLOYD gave his experience with arachnodactylism.

DR. ISIDORE GIVNER said exophthalmos has been reported following oral administration of thyroid.

Louis A. Feldman,
Transaction Editor.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

November 15, 1938

DR. EDWIN B. GOODALL, *presiding*

OBSTETRIC OPHTHALMOLOGY

DR. DEWEY KATZ read an interesting paper on this subject which was discussed in the light of present knowledge under the headings of: changes in the visual field, ophthalmologic aspects of the toxemias of pregnancy, retinal detachment in pregnancy, ophthalmologic indications for the termination of pregnancy and sterilization, birth injuries, ocular disease in the puerperium and lactation period, and ocular disease of the fetus and the newborn.

Dr. Katz's paper is to be published in detail in a book, "Obstetrics," which is being edited by Dr. Fred Adair, Chairman of the Department of Obstetrics and Gynecology of the University of Chicago.

Discussion. Dr. William P. Beetham said that undoubtedly the most interesting phase of "obstetrical ophthalmology" is

the ocular changes that occur in eclampsia. In 4,410 patients delivered through the Boston Lying-In Hospital in 1935, there was a toxemia incidence of 342, or 7.7 percent of all deliveries; in 4,047 patients in 1936, a toxemia incidence of 388, or 9.5 percent; in 4,017 patients in 1937, a toxemia incidence of 327, or 8.1 percent. Roughly, therefore, a toxemia rate of 8 percent of all pregnancies or 80 per 1,000 pregnancies. In the toxemia group: in 1935, eight cases of eclampsia (out of 342 toxemias); in 1936, four cases of eclampsia (out of 388 toxemias); in 1937, 10 cases of eclampsia (out of 327 toxemias); 22 cases of eclampsia in three years, or an incidence rate of 2 percent of all toxemias, or two per 1,000 pregnancies. It is interesting to find that of the 22 cases, 12 developed in patients given some prenatal care and all lived, while 10 developed in patients who had had no prenatal care and seven died. It is, therefore, obvious that for proper statistical consideration, only patients registered for care, and followed in the prenatal clinics, should be studied. From April 21, 1935, to January 1, 1937, the preëclampsic registered patients, to the number of 500, have recently been studied by Dr. F. C. Irving, Professor of Obstetrics, Harvard Medical School. Eighty percent of these 500 were classified as a mild type of preëclampsia; that is, hypertension of moderate degree with no more than a slight trace of albumin in the urine. Twenty percent were of the severe type, having marked, or increasing hypertension and albuminuria. (Hypertension in 16 cases included, 3 nephritis included, 252 primipara, 248 multipara.) It so happened that Dr. Beetham made fundus studies on 197 of these 500 cases. Group 1: 124 cases, 67 percent of the total group observed. Sixty-four percent of this group showed no fundus changes; 34 percent showed increased light reflexes

on vessels, and gave the impression of generalized contraction of the arterial tree; 2 percent showed vessel changes severe enough to give arteriovenous compression. Thus, 36 percent of this group showed vessel changes. Group 2: 73 cases, 33 percent of group observed. Twenty-five percent of this group showed no fundus changes; 56 percent showed increased light reflexes on vessels, and gave the impression of generalized contraction of the arterial tree; 19 percent showed arteriovenous compression. Thus 75 percent of this group showed vessel changes. Much laboratory work has been done on these patients, pathological results being obtained in only 14 percent. The most consistent finding in this entire group, aside from the hypertension, albuminuria, and edema, is the changes in the retinal vessels which occurred in 51 percent of the group as a whole. This indicates the close relationship between preëclampsia and the vascular system. The kidney lesion in eclampsia is considered primarily an arteriolar spasm of the afferent vessels of the tubules. Not one of the cases in this group of 500 showed retinal hemorrhages, edema, exudates, or separations. In other words, the changes one associates with "retinitis of pregnancy" are very uncommon, and one must say that they occur chiefly in the poorly cared for, or neglected cases of pregnancy with toxemia. During the past five years, in answer to most of the consultation requests at the Boston Lying-In Hospital, possibly 8 or 10 retinal separations have been seen (six per hospital record file), and incidentally these are always bilateral; possibly another 15 or 20 cases with occasional hemorrhages or exudates were observed. It was Dr. Beetham's personal opinion that the presence of hemorrhage, exudate, or retinal separation is sufficient evidence to advise interruption of pregnancy.

Dr. Beetham said that Dr. Irving's sta-

tistics indicate that the infant mortality is better if the pregnancy is interrupted during the eighth month, rather than continued through the ninth. Immediate maternal mortality need not be great in carefully treated cases: one case in the group of 500. It is much greater in the neglected cases. Dr. Beetham believed that fully one half of the patients having retinal separation died of eclampsia during hospitalization. If patients with retinitis of pregnancy survive the immediate disease, their prognosis as regards life is reasonable, some 50 percent being alive 10 years later, according to Nettleship.

THE USE OF MECHOLYL AND PROSTIGMINE IN GLAUCOMA

DR. SAMUEL T. CLARKE, Interne at the Massachusetts Eye and Ear Infirmary, read a very interesting paper on the above subject. Dr. Clarke came to the conclusion that mecholyl and prostigmine will prove to be of value in the treatment of glaucoma particularly in the acute and sub-acute types. This paper was published in this Journal (March, 1939).

Discussion. Dr. Paul A. Chandler said that among the many unsolved problems in ophthalmology, glaucoma had its share. In cases of acute congestive glaucoma, if the tension can be reduced with miotics before operation, almost invariably the iridectomy permanently lowers the tension. If however, the tension is not lowered with drops, and we are forced to operate with the pressure high, in many cases the tension does not remain at the normal level, and further surgery is necessary. This is probably due to the formation of anterior peripheral synechiae and a permanent block in the angle of the anterior chamber. With the use of these new drugs the majority of cases of acute glaucoma can be brought to a state of normal tension before operation, so iridectomy may be expected permanently to

relieve a much higher percentage of cases. Dr. Chandler did not think this medication should be considered as a substitute for operation. Once a patient has an attack of acute congestive glaucoma, almost invariably further attacks follow, and he believes an iridectomy is indicated in practically every case. With these new drugs the percentage of operative success will undoubtedly be considerably higher, and the lowered tension preoperatively will certainly minimize the operative risk. Although, as yet, not much is known about the effect of these drugs in chronic glaucoma, they promise to be a valuable adjunct in treatment. There are many borderline cases which are not quite controlled with the miotics thus far available, yet for one reason or another we are disinclined to operate.

Dr. Edwin B. Dunphy said that in 1905, T. R. Eliot observed that after section of a sympathetic nerve going to a smooth muscle, this same muscle would contract perfectly if epinephrine were applied to it. From this Eliot assumed that the nerve impulse caused the secretion of an epinephrinelike substance at the myoneural junction, and that this new substance caused the muscle to contract. Since then many physiological experimenters, notably Leowi, have actually demonstrated that chemical substances are formed at the myoneural junction upon stimulation not only of the sympathetic, but also of the parasympathetic; in the former, epinephrine, and in the latter, acetylcholine. It was due to this discovery that our knowledge about the pharmacologic action of miotics was greatly increased.

In treating a case of glaucoma it would be ideal if we could know whether we were dealing with a failing ocular parasympathetic or a hyperactive ocular sympathetic. If the parasympathetic is at fault, is it because we have an underproduction of the acetylcholine or an over-

production of the esterase, or both? In the case of a predominant sympathetic, is there an overproduction of epinephrine-like substance or merely an increased sensitivity of the effector cells? All these questions are theoretical and cannot be answered at the present time. However, he believes it is reasonable to assume that there are several types of glaucoma, associated with various dysfunctions of the vegetative nervous system, and it is wise, therefore, to experiment with various drugs before deciding upon surgery.

Dr. Clarke has brought to our attention two new drugs, mecholyl and prostigmine, which are well worth a trial. Several of the cases reported by Dr. Clarke impressed Dr. Dunphy with their prompt response to this medication, particularly in cases of acute glaucoma in which pilocarpine and eserine had failed to bring the tension down to a satisfactory level. Dr. Clarke had done well to point out the dangers of injecting mecholyl and to take the precaution of having ready 1/100 grain of atropine as an antidote. Last year Dr. Dunphy injected 4/100 of a gram of mecholyl in a case of embolism of the central retinal artery in which the blood pressure was normal. Dr. Dunphy observed no change whatever in the dimensions of the retinal vessels. The systemic effect was rather startling, however. The patient complained of sweating, salivation, nausea, hot skin, dyspnea, and cardiac pain. Unfortunately the atropine was not ready for injection and a delay of five minutes took place which was about as uncomfortable for Dr. Dunphy as it was for the patient. The only other case in which Dr. Dunphy personally injected mecholyl was in an elderly man with tobacco amblyopia. The blood pressure was normal and the patient received 2/100 of a gram. The systemic reaction was very mild and no atropine was needed. No improvement in the patient's vision

took place after several injections. Dr. Dunphy said that in discussing the various actions of acetylcholine, Dr. Clarke did not mention the contraction of the recti muscles and the oblique muscles of the eye, which Duke-Elder pointed out in his address before this Society in 1930. Although this may be of no practical importance because of the small doses used by Dr. Clarke, it is interesting to remember that in larger doses a sharp contraction of all the extraocular muscles is induced, thereby causing a rise in the intraocular pressure. Dr. Dunphy felt that mecholyl and prostigmine are well worth a trial in certain cases of glaucoma where pilocarpine and eserine have failed to bring down the tension to normal.

Trygve Gundersen,
Reporter.

LOS ANGELES SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

November 28, 1938

DR. F. C. HERTZOG, *presiding*

MUCOUS-MEMBRANE GRAFTS IN OPHTHALMIC CONDITIONS (with motion pictures)

DR. HAROLD F. WHALMAN presented a paper on this subject. He stated that whenever it becomes necessary to supplement or to supplant conjunctival tissue for any reason whatever, nothing serves better than a graft of mucous membrane from the mouth. Skin exfoliates and sometimes becomes rough and irritating and may even cause corneal ulceration. Mucous membrane remains smooth and soft.

He said that such transplants may be useful in a number of conditions, such as recurrent pterygium, replacement of excised tissue growths, symblepharon, trachoma, vernal conjunctivitis, and colo-

bomata. It was his opinion that the most important part of the procedure was obtaining a sufficiently large, clean, untraumatized graft. Then it could be fixed anywhere on the globe.

Dr. Whalman asserted that the surgical treatment of pterygium appears simple enough, but when such a growth recurs two or even three times it is nothing short of exasperating and decidedly embarrassing even if the patient has stayed with the original operator, which is not usually the case.

He affirmed that most recurrences can be avoided by careful execution of certain details. It is important to excise all of the corneal growth, even taking thin slices of the superficial layers of the substantia propria if necessary. The hyalinized subconjunctival tissue should be thoroughly excised. Exact application of a new portion of the bulbar conjunctiva to run transversely to the previous direction of tissue and vessels is the last detail. McReynolds has emphasized these points.

He averred, however, that there seem to be certain incorrigible cases in which recurrences defy the usual procedure. In such instances a mucous-membrane-graft operation is appropriate. Thorough excision of the head of the growth and ablation of the entire growth are the proper preparation. Then the transplant is sewed into place with four black-silk corner sutures. It is preferable to bandage both eyes for three days and to remove the stitches on the fourth day when the graft will have completely taken, barring complications.

Dr. Whalman stated that symblephara are freed from their attachments and mucous membrane supplanted sufficient to cover slightly more than the area denuded, using interrupted stitches or in some cases running sutures. The author had not found a stent to be necessary.

He said that in trachoma where other measures have failed and there have been numerous recurrences of corneal ulcers, the following procedure is advocated. An incision is made parallel to and about three millimeters back of the margin of the upper lid through the conjunctiva and cartilage. The cartilage is separated back to the fornices and completely excised with the conjunctiva. The mucous-membrane graft is then sewed into place with two running sutures, one in the proximal conjunctival margin and one in the distal conjunctival margin of the excised area.

Dr. Whalman asserted that vernal conjunctivitis can be treated similarly to trachoma, but it is not always necessary to include the tarsal cartilage.

He said that a number of authors have recently written on the subject of mucous-membrane grafts. Spaeth, Green, and Rambo are among the American writers; the first named (Spaeth) being outstanding in versatility and the last (Rambo) notable for his voluminous experience.

Spaeth and Green use the buccal surface of the mouth. The former points out the necessity of avoiding the parotid duct, and advises suturing the edges of the wound from which the graft is taken.

Dr. Whalman stated that technically it is much easier to obtain mucous membrane from the lower lip. The lip can be easily turned down and out and a large area exposed without the necessity of working at difficult angles. Furthermore, in this region there are no salivary ducts to be avoided.

He said that in his experience it has not been necessary to suture the edges of the wound from which the graft is taken, as this area is promptly epithelialized in about four days in the same way that the tonsil fossae are quickly covered after tonsillectomy. He maintained that antiseptics appear to be entirely unnecessary

before or after excising the transplant, and may be a disadvantage as they tend to devitalize the graft or healing areas.

To avoid traumatizing the graft, Dr. Whalman prefers following a technique for excising the transplant similar to the manner in which a Wheeler graft is taken from the skin of the upper lid. Anesthesia is first accomplished by placing a sponge saturated with 10-percent cocaine between the teeth and the lower lip. Then a small amount of 2-percent novocaine with adrenalin is injected into the area to be excised.

He stated that the graft is outlined with the point of a long (33-millimeter) Graefe cataract knife. It need be only slightly larger than the area to be covered as there is less contraction in mucous membrane than in skin grafts. Then the long blade is inserted flat under the mucous membrane at the center of the upper border of the outlined area and stabbed through to the lower edge. A sawing motion carries the blade out to one extreme of the graft but not to completion. Then the blade is carried in the opposite direction to completion. The extremity of the first incision is cut with scissors and the graft is free. It can then be laid flat on the back of the hand for trimming off any excess submucous tissue with scissors. Being thin and fragile great care must be used in handling the graft. The procedure described avoids entirely the

use of traumatizing forceps in obtaining the graft. Forceps are used, but to a minimum extent in sewing the graft into position.

Discussion. Dr. Boyce stated that he had seen Dr. Whalman's work and that the results were very satisfactory.

Dr. Alfred Robbins showed pictures of a case in which he had used mucous membrane for the repair of an extensive symblepharon.

Dr. Reina said that he had used mucous-membrane transplants for the treatment of trachoma. He said that he obtained his grafts in a similar manner but advised suturing the denuded area from which the graft was obtained, even though his sutures frequently pulled out.

In conclusion Dr. Whalman pointed out that mucous membrane could be obtained from the lower lip with the greatest facility and emphasized excising the graft with a cataract knife in the manner described, in order to avoid trauma. He reiterated his opinion that it was unnecessary to sew the edges of the wound from which the graft is obtained, since epithelialization is smooth and sufficient. Stitches are very apt to pull out, as Dr. Reina mentioned, and only prolong the healing process. He further stated that antiseptics had been unnecessary in his experience.

Harold F. Whalman,
Editor.

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NEXT INTERNATIONAL CONGRESS

When the last International Congress of Ophthalmology was held, at Cairo, Egypt, in December, 1937, Czechoslovakia still existed as an independent political entity, in the form established shortly after the World War.

Through most of the next year there were threats of international conflict. In April, the German Fuehrer, apparently fearing an unfavorable plebiscite by the Austrian people on the question of whether they should be annexed to Germany, cut the Gordian knot by forcible seizure of the little republic. In the following September the Munich conference between Chamberlain, Daladier, Hitler, and Mussolini (with Benes looking on as

a helpless victim of the great game of give and grab) called a halt to the mobilization which had been going on feverishly in four European countries. The Czechoslovakian lamb was shorn of Sudetan land and people and of military strength.

Not many months later the lamb was unceremoniously swallowed by one who had declared that his game of grab was limited to reabsorption by the German Reich of those German people who had been unrighteously detached from their nationalistic or linguistic brethren.

A resolution adopted at the Cairo Congress, in favor of holding the next Congress at Vienna in 1941, was based upon recognition of Vienna's traditional leadership in medical art and teaching. For

several generations that city had occupied its unique position in the brotherhood of medicine, first under the relatively liberal government of the old Austro-Hungarian empire, and latterly under the confused succession of régimes created by the bankruptcy and economic distress consequent upon the World War and the peace settlement.

In spite of many more or less wanton acts by the Austrian Socialists and their opponents, Austria had still preserved in large measure the traditions of free speech and independent thinking associated with the development of democratic institutions during the nineteenth and twentieth centuries. The very existence of the noisy Nazi party of Austria, prior to the forced Anschluss, was potent evidence of this fact.

It appears to be an open secret that the International Council of Ophthalmology, after some wavering because of the changed political situation, has decided that the next Congress ought to be held in Vienna. This resolution is said to have followed a statement that German ophthalmologists would not attend the Congress if it were held anywhere but in Vienna. Many American ophthalmologists will be disposed to doubt the wisdom of the Council's judgment. It would be a matter for regret if a Congress outside of Germany could not be attended by German ophthalmologists. But would it not be equally regrettable if a Congress in Vienna failed to attract the ophthalmologists from other countries who usually attend such gatherings?

It would be ridiculous to assume that the atmosphere of a congress held in Vienna under present conditions could be unconstrained; or that during such a Congress there could be anything approaching the freedom of speech and thought to which citizens of democratic countries, including the United States, are ac-

customed. Even as to medical matters, opinion in a "totalitarian" state is bound to be dominated from above, as witness certain views on heredity, and a recent German discussion of an epidemic of keratitis which to most readers must sound suspiciously nutritional in character but has not been so interpreted in the German medical press.

The average visitor to an international congress does not travel solely for consideration of scientific problems. He hopes to enjoy unhampered contact with the personalities, beliefs, and general outlook of distinguished colleagues of other lands. He has the usual curiosity of the intelligent tourist as to his social, economic, and political environment. None of these intellectual appetites can be satisfied in a totalitarian atmosphere. Moreover, in Vienna, many of the most illustrious among our professional colleagues have been deprived of the opportunity to practice their profession, or have been forced into exile, or may even be confined in concentration camps. Is such an intellectual atmosphere attractive for an international ophthalmological congress?

An esteemed correspondent, who recently called the writer's attention to the general understanding that Vienna had been selected for the next Congress, points out that, so far as American ophthalmologists are concerned, the time is much more propitious for a Pan-American than for a universally international congress.

The great republics of the Western Hemisphere are increasingly conscious of happy differences between their interrelationships and those of European political units. Europe offers little, North and South America much, hope of permanent peace and harmony. The American commonwealths are steadily being drawn closer in friendship, in economic understanding, and in the need for de-

fence against the traditional ambitions which characterize a large part of the European continent. There ought to be a still greater rapprochement between the commonwealths of North and South America. To such a policy the government of the United States is pledged, and to such an effort in the field of medicine the government is not unlikely to give needed financial support. An excellent air service is available between North and South American points.

Our correspondent suggests that a Pan-American ophthalmological congress should not be allowed to degenerate into a "cruise junket," but should have in the first place a serious scientific character and purpose; that its council should be organized with proper representation from every country of the hemisphere; and that the enterprise should be backed vigorously by national societies, leading ophthalmologists, and great educational institutions of the United States.

The proposal is thoroughly worthy of consideration. There hardly seems room for any great hope that, for the purposes of an ophthalmological congress, the international situation in Europe will have become much more attractive in 1941 than it is at the present moment. It is to be feared that under these conditions an international congress of ophthalmology held in Vienna might prove abortive.

W. H. Crisp.

VISION FOR MOTOR DRIVERS

Legal requirements for vision of drivers of automobiles and trucks on the highways show that there is an appreciation of the fact that good vision is needed. But the rules adopted do little to secure safety on the highways for either the drivers or those they encounter. The law

may require vision of 20/30; but does not specify the light in which the test should be made. Eyes with standard vision have been declared unqualified, because the light on the test card was so poor they could only read 20/40 in the test. At best, the test letters test only macular vision. That may be perfect, and other parts of the visual field so defective as to make the driver blind to important dangers.

The article by Luckiesh and Moss in our March number (p. 274) calls attention to the reduction of vision by reduced illumination. Persons may be "night blind" by congenital defect or chronic disease. It may also arise suddenly by acute disease or impaired retinal nutrition from vitamin-deficiency disease that is not thought of as affecting the eyes. Hereditary congenital night-blindness is found in people who seem to have very good vision in strong daylight. Boys may grow up without knowing they are color blind; and in retinitis pigmentosa marked night-blindness and great narrowing of the visual field may gradually develop without attracting attention.

Parents are generally very slow to admit that their children have defects of sight or hearing. A man who knew his boy's sight was not good was quite proud that his son was able to drive the automobile. The boy had myopia, choroidal atrophies; and his best vision was barely 6/60.

Patients with optic neuritis or papilledema, but whose vision generally continues good, are liable to a sudden blindness that may pass in a few minutes, or may last for hours; so that they are afraid to go on the street alone. Patients with tobacco or alcohol amblyopia are generally subject to great variations in their general visual disability; and they have not become conscious of these great variations, which may occur from differences of light adaptation in their eyes.

There are other sources of danger on the highways like the driver who has had "only one or two drinks," and has high alcoholic confidence in his ability to do anything. But such dangers do not justify taking risks with poor vision. It may be necessary to disqualify for night driving some who can safely drive during the day.

Edward Jackson.

LECTURES ON THE MOTOR ANOMALIES

In the August issue appeared the last of 12 lectures on "Motor anomalies" by A. Bielschowsky, an authority on the ocular muscles. These lectures were delivered before the Seventh Annual Mid-Western Clinic Course of the Research Study Club, Los Angeles, California, in January, 1938. The editors of this Journal consider themselves very fortunate in having been able to publish these lectures, as they constitute an outstanding contribution to the subject of ocular muscles.

In response to many inquiries as to whether these articles would be available in a single volume, the JOURNAL is pleased to announce that Doctor Bielschowsky has planned to have them published as a monograph. Our readers will be advised later how to obtain this monograph.

A brief analysis of the material may prove of interest. The first lecture covered the physiology of ocular movements starting with the consideration of anatomical arrangement of the visual pathways and normal and abnormal retinal correspondence. The author in his first paragraph recognizes that the field of these studies is probably the most difficult in ophthalmology. It is, perhaps, unfortunate that it is necessary to begin with abstruse consideration, but logically

there is no way to avoid it, and the author has made the subject as clear as it can anywhere be found.

The second lecture deals with the theory of heterophoria, and the third with its signs and symptoms. The fourth considers the etiology of strabismus, and is a classic in itself. Nowhere will one find a better exposition of the subject. This is followed by "The development and course of strabismus."

The sixth lecture has to do with principles of surgical treatment. Details are not given. This is in line with the general theory of these lectures in that they assume considerable preliminary ophthalmic knowledge. Details of operations for squint do have a certain importance, but any good method will prove satisfactory if the surgeon applies it with a thorough understanding of the underlying pathology, whereas the most perfect method is useless if the nature of the squint is not recognized.

Lectures seven and eight deal with the nature of ocular-muscle paralyses and the effects when individual muscles are involved. Lecture nine concerns group paralysis, and ten, the supranuclear, such as conjugate deviations and paralysis of convergence and divergence. Lecture eleven has to do with the etiological prognosis and treatment of ocular paralysis, and the last lecture is concerned with ocular spasms.

The whole series constitutes a profound and searching consideration of motor anomalies. The subject is dealt with from a philosophical standpoint that is, however, capable of practical application.

This monograph will be one that any ophthalmologist will be proud to have in his library.

Lawrence T. Post.

BOOK NOTICES

THE PRINCIPLES AND PRACTICE OF OPHTHALMIC SURGERY. By Edmund B. Spaeth, M.D. Cloth bound, 413 engravings, containing 1,031 figures and 4 colored plates. Lea and Febiger, Philadelphia, 1939. Price \$10.

To compile in one volume a comprehensive review of the world's literature on ophthalmic surgery, and to sift for the reader the chaff from the grain, is an undertaking that few busy ophthalmologists would choose. To evaluate from the standpoint of classical technique the many surgical procedures that have been described and advocated by four generations of surgeons is an heroic task in itself; then through personal experience to learn of the pitfalls of personal adaptability to one's own surgical practice is to give the fire test to material, both ancient and modern, that goes into the making of a comprehensive presentation such as the author has provided. The results of his endeavors as a reviewer, as a surgeon, and as a commentator are evident on every page of the book. The author's personality is revealed in every chapter. His opinion on surgical indications is clearly and unequivocally stated. His favorite technical procedures are made his own by being described and elucidated in his own manner of telling. Thus it becomes Spaeth's surgery. This is in keeping with the modern trend of medical book writing, an insistence of the book publisher that a worth-while medical book must contain information plus personality. The author has kept faith with the publishers. But this is not an adverse criticism. A volume such as the author has produced is not the treasure of a miser who seeks only to hoard gains for his own selfish glory. It is the fulfillment of a wish to pass on to others less gifted than he the fundamentals of a scientific practice of professional medical technical

accomplishments to the mutual advantage of his professional colleagues and their patients, and to pass this information on as a teacher and adviser. Therein lies the personality of this volume, and for this feature of the book its reception by those for whom it is intended will stand. It is not only a reference book—an authentic and a good one—it is a textbook in the true sense of that term.

The mechanical arrangement of the book is based on anatomical considerations. It begins with a chapter on anesthesia and glides easily through the author's favorite field of plastic surgery in more than 400 pages wherein he discusses conditions of the lids, orbit, and lacrimal apparatus and their treatment. There is no volume available that treats of this phase of the ophthalmologist's practice so exhaustively and so lucidly.

The remaining chapters of the book are devoted mostly to surgical considerations of disorders and diseases of the eyeball. Indications for surgical intervention as established by experience are conventionally described, but, none the less, are stated clearly with reasons based on principles of the best medical practice so that no one can be misled into adoption of any of the described surgical procedures without knowledge of the probable therapeutic result. It would seem that nearly all worthwhile operations are adequately described, most of them in the language of the originator of the technique or in that of an experienced surgeon-commentator. The author's style of presentation in this section of the book as well as in the first part is pedagogical, he is still the teacher. Operations succeed or fail on details, as every teacher knows. Therefore, if one must learn a new procedure from a text, as almost all of us must, a clear exposition of details is essential. Where description is difficult, diagrams or illustrations have been inserted, most of which are well

done in spite of the fact that not all of them are the author's own lucid drawings but adaptations from the originals. Too many illustrations in the usual run of publications are presented to illustrate a desired effect rather than to aid one in the maneuvers by which such an effect is accomplished. The author, of course, could not avoid this pitfall without assuming a sponsorship for ideas that did not originate with him. The illustrations are, on the whole, purposeful and instructive.

Minor errors in descriptions of operations and mistakes in references are to be found in any text of such proportions and are to be found in this volume, but so long as they are insignificant and apparent to anyone who is conversant with the literature of ophthalmology, there is no use in setting them up as criteria on which to judge the value of a good piece of work.

This most comprehensive and valuable textbook should be in the library of every person interested in ophthalmology.

W. L. Benedict

BULLETIN OF THE OPHTHALMOLOGICAL SOCIETY OF EGYPT, 1938, volume 31, session 35. 118 pages, Cairo, Imprimerie Misr S.A.E., 1939.

This bulletin follows the usual style of such publications with items on officers, council, members, rules and regulations of the society, and so forth. Eighty-two pages of the bulletin are given over to the communications presented before the society during the past year. These include a number of case reports of more interesting and perhaps curious manifestations

of the eye which do not lend themselves for purposes of review. Of the more reviewable reports are those by Dr. M. Riad Bey on cataract with cholesterolin deposits, apparently a familial condition to be classified as a congenital anomaly; a "symposium" by several authors on the genesis of retinal detachment and its treatment by diathermy; and, finally, several papers on various tumors with a particularly interesting report on the radiological treatment of tumors of the sella region by Dr. Max Meyerhoff. While Dr. Meyerhoff believes that radiological treatment improves the vision of such patients and may even prevent destruction of the optic nerve by pressure, and check the progress of hypophyseal tumors, surgical intervention is really the only certain means of therapy.

L. A. Julianelle.

VIAS DEL NISTAGMUS (Nerve pathways of nystagmus). By Dr. Baudilio Courtis. 150 pages, 93 photomicrographs. Buenos Aires, Aniceto Lopez, 1938. Price not stated.

This monograph (teacher's thesis) presents an extensive historical review of previous work on nystagmus, tabulates several types of classifications of this disorder, and elaborates the author's own classification from anatomic, pathologic, and functional standpoints. The present classification covers various disturbances of the ocular proprioceptive sense and of the vestibular system. The author regards nystagmus as a reflex phenomenon.

George A. Filmer.

ABSTRACT DEPARTMENT

EDITED BY DR. WILLIAM H. CRISP
ASSISTED BY DR. GEORGE A. FILMER

Abstracts are classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

- | | |
|--------------------------------------------------------|--------------------------------------------------------|
| 1. General methods of diagnosis | 10. Retina and vitreous |
| 2. Therapeutics and operations | 11. Optic nerve and toxic amblyopias |
| 3. Physiologic optics, refraction, and color vision | 12. Visual tracts and centers |
| 4. Ocular movements | 13. Eyeball and orbit |
| 5. Conjunctiva | 14. Eyelids and lacrimal apparatus |
| 6. Cornea and sclera | 15. Tumors |
| 7. Uveal tract, sympathetic disease, and aqueous humor | 16. Injuries |
| 8. Glaucoma and ocular tension | 17. Systemic diseases and parasites |
| 9. Crystalline lens | 18. Hygiene, sociology, education, and history |
| | 19. Anatomy, embryology, and comparative ophthalmology |

6

CORNEA AND SCLERA

Bonnet, P., Bonamour, G., and El Khalifah, M. **Ocular chrysiasis (impregnation of the cornea and conjunctiva by gold)**. Arch. d'Opht. etc., 1939, v. 3, May, p. 385.

Chrysiasis of the eye (the clinical manifestation of which is the impregnation of the cornea and conjunctiva by gold), observed in the course of prolonged treatment with salts of gold, presents an interesting problem of pathologic physiology. Corneal chrysiasis can only be detected by biomicroscopy. It has no effect on visual efficiency. In the shadow of the cornea adjacent to the light slit, one sees a purple reflex. The posterior surface of the cornea shows many extremely fine brick-rose-colored dots in the immediate neighborhood of Descemet's membrane. They are more dense toward the limbus, especially above and below. The nature of the gold salts plays no part in the aspect of impregna-

tion. It is necessary that the dose injected be sufficiently great. The minimum dose necessary is 3 gm. Chrysiasis of the conjunctiva reveals itself by its yellowish color, which on analysis is found to be due to lymphatic impregnation with fine dots around the capillaries of the limbal palisades.

Animal experiments were performed. Chrysalbine was used intravenously, and the rate of appearance of ocular chrysiasis was studied. Three methods of detection of the presence of gold in the ocular tissues are described. These are (1) chemical, (2) electrolytic coloration of a protein membrane, and (3) histospectography, which can be used clinically. The impregnation of ocular tissue (iris, sclera, cornea, and conjunctiva) with gold thus offers a method of vital staining which should lead to knowledge concerning ocular physiology. Gold is not present in the lens. (Colored plate, references.)

Derrick Vail.

Cornet, Emmanuel. **Interstitial keratitis "soufflé."** Ann. d'Ocul., 1939, v. 76, April, pp. 297-300.

This lesion is formed primarily from an interstitial keratitis with its new-formed vessels. It is always associated with a trachomatous pannus and its separate vascularization. At the edge of the zone of parenchymatous infiltration the cornea swells, sometimes leaving epithelialized depressions which do not take fluorescein. Finally a third system of vessels invades the cornea as a vascularization of repair. The author believes that trachoma and syphilis are responsible, not tuberculosis.

John M. McLean.

Czukrász, Ida. **Application of vitamin B in the treatment of hypovitaminosis of the eye.** Orvosi Hetilap, 1939, v. 83, April, p. 365.

While the oral administration of vitamin B is not sufficient for the treatment of keratitis and pannus, subconjunctival injection of this vitamin and its local application in the form of an ointment gave the author very good results in treatment of keratitis dendritica and herpes zoster.

R. Grunfeld.

Grzedzielski, Jerzy. **Interstitial keratitis.** Klinika Oczna, 1939, v. 17, pt. 2, p. 137.

A very thorough review of the literature of the last ten years.

Ray K. Daily.

Le Guillas, Coulouma, and Van Var-seveld. **Interstitial keratitis and arthropiostic phenomena in the course of acquired secondary syphilis.** Arch. d'Opht. etc., 1939, v. 3, March, p. 231.

A case of interstitial keratitis associated with arthritis and osteoperi-

ostitis with improvement following antiluetic treatment is described. The authors believe that the general treatment in acquired syphilis of the eye should be by neosalvarsan, while in congenital interstitial keratitis treatment should consist of mercury and its salts.
Derrick Vail.

Michaïl, D. **Filamentous keratitis.** Arch. d'Opht. etc., 1939, v. 3, March, p. 205.

After reviewing the literature and discussing the etiologic theories of filamentous keratitis (particularly that of lacrimal hyposecretion), three cases in elderly patients are reported. The condition followed trauma. The author concludes that filamentous keratitis is of trophic origin, resulting from a lesion of the sympathetic nerves in certain feeble individuals. Paradoxically, the three cases were cured by further ocular disturbance (surgery, a concurrent phlycten). (Bibliography.)
Derrick Vail.

Peyret, J. A. **Rodent ulcer of Mooren.** Arch. de Oft. de Buenos Aires, 1938, v. 13, Oct., p. 527.

Description of a case of rodent ulcer of Mooren in a 35-year-old patient, with discussion of the etiology, pathogenesis, pathologic anatomy, diagnosis, prognosis, and treatment of this rare condition.
Edward P. Burch.

Rosengren, B. **Treatment of ulcus serpens cornea with M.B. 693 (sulphopyridine).** Acta Ophth., 1939, v. 17, pt. 2, p. 209.

Six brief case reports illustrate the effectiveness of this drug in serpiginous corneal ulcers. Ray K. Daily.

Rubbrecht, R. **Surgical treatment of affections of the cornea.** Bull. Soc. Belge d'Opht., 1938, no. 77, p. 18.

This is the third communication by the author under the above title. It concerns the treatment of superficial affections of the cornea by excision of the diseased tissue, and covering the denuded area with a thin flap from the bulbar conjunctiva. Ten clinical case reports are presented, in two of which the flaps failed to adhere, but the final results were so good in these latter cases that they led to a simplification of the operation. After simple excision of a corneal lesion it was noted that the normal curvature of the cornea was re-established after a few months and little if any astigmatism remained. On the contrary, if excision was combined with conjunctival protection the corneal curvature was not re-established. It seems to be a well-established fact that in the event of a lesion of the superficial layers of the cornea the epithelium bordering on the lesion displays great activity in behalf of repair, while the parenchyma plays an unimportant rôle in the restoration of tissue. In removing diseased corneal tissue it is important to carry the excision to the border of the normal tissue in order that the epithelium may be unimpeded in its restorative growth. (9 illustrations.) J. B. Thomas.

Schousboë, F. **Some manifestations observed in North Africa of hereditary and acquired syphilis in the region of the limbus.** Ann. d'Ocul., 1939, v. 76, May, pp. 376-390. (See Section 5, Conjunctiva.)

Senger, W. **Further reports of an epidemic conjunctivitis of unknown etiology.** Münch. med. Woch., 1939, v. 86, April 21, p. 607.

From various parts of Germany an epidemic of conjunctivitis or keratoconjunctivitis is reported which resembles in some ways keratitis nummularis (Dimmer). In Munich alone 500 cases have been reported during the past four months. The most frequently used names for this condition are: keratoconjunctivitis epidemica, and keratitis superficialis epidemica. The inflammation is of long duration, especially in those cases in which the cornea is affected; but it seldom leads to permanent impairment of vision. Bertha A. Klien.

Smitmans, F. K. **Keratoconjunctivitis epidemica 1938.** Med. Klin., 1939, v. 35, Feb. 24, pp. 235-237.

Since July, 1938, an epidemic keratoconjunctivitis has been reported from Berlin, Bonn, and Munich, while other parts of Germany have remained entirely free from it.

The disease begins with general malaise and slight increase of temperature, which are followed after a few days by the conjunctivitis, which is characterized by intense swelling of the palpebral conjunctiva, chemosis of the bulbar conjunctiva, and a mucoserous discharge. Hemorrhages are absent. The acute symptoms subside after eight or twelve days, and at that time the corneal manifestations begin. These consist of disciform infiltrates in the most anterior layers of the corneal stroma, densest in the pupillary portion, and often vesicular detachment of the epithelium. The epithelial lesions heal within a few days, but the parenchymatous infiltrates remain unaltered for many weeks. No vascularization of the cornea could, however, be observed. The disease is extremely infectious, and minor traumas (removal of a foreign body, repeated tonometries) are

predisposing for it. Although the disease resembles herpetic infection it cannot be considered a true herpes as experimental transmission to the rabbit cornea gave negative results.

Bertha A. Klien.

Stokes, W. H. **Notes on experimental keratitis: An investigation of the cellular pathology with particular reference to the macrophages.** Trans. Amer. Ophth. Soc., 1938, v. 36, pp. 316-368.

An extensive review of the literature concerning researches on the cellular elements in inflammation and on the histopathology of experimental keratitis is given, together with the results of certain investigations by the author. In different groups of rabbits, trypan blue was injected intravenously, subconjunctivally, intracorneally, and into the anterior chamber. Twenty-four hours after the injection the eyes were enucleated and the corneas examined pathologically, with particular reference to vital staining of phagocytic cells. It was found that the corneal corpuscles were capable of phagocytosis and could be an early source of local formation of macrophages. This was not true of the endothelial cells.

George A. Filmer.

Tettamanti, J. **Crystalline parenchymatous degeneration of the cornea.** Arch. de Oft. de Buenos Aires, 1938, v. 13, Oct., p. 519.

Report of a case in a 36-year-old woman of nonspecific interstitial keratitis characterized by crystalline deposits in the deep layers of the corneal stroma.

Edward P. Burch.

Turpin, R., Tisserand, M., and Sérané, J. **Hereditary and congenital corneal opacities occurring in three generations and affecting monozygotic**

twins. Arch. d'Opht., etc., 1939, v. 3, Feb., p. 109.

A family history of corneal dystrophy characterized by milky-white opacification of the entire cornea, more marked in the center. Biomicroscopic examination showed the opacity to consist of multiple flocculent white dots situated in the anterior stromal layers. There was no vascularization and the corneal sensitivity was not reduced. There were no other concurrent congenital anomalies. Visual acuity was reduced in all cases. The condition appeared in three generations and was obviously dominant. Monozygotic twins (females) in the second generation were identically affected. One transmitted the condition to a female offspring. Nothing is known regarding the pathogenesis. (Diagram.)

Derrick Vail.

Veil, P., and Sarrazin, L. **Hereditary and familial megalocornea.** Ann. d'Ocul., 1939, v. 76, April, pp. 241-252.

Arguments from the literature for and against the thesis that megalocornea is an arrested form of partial buphthalmos are cited. The frequent development of cataract and dislocation of the lens is explained by the failure of the lens to enlarge with the rest of the anterior segment. Three cases are reported with the family tree, showing that megalocornea appeared as a sex-linked recessive character.

John M. McLean.

7

UVEAL TRACT, SYMPATHETIC DISEASE AND AQUEOUS HUMOR

Bonnet, P., and El Ani, C. **Disseminated miliary granulations of the iris.** Arch. d'Opht. etc., 1939, v. 3, March, p. 193.

Six cases are described in which, un-

der biomicroscopy alone, the iris showed disseminated small hemispherical projections, translucent and grayish-white in color. These were situated in the anterior stroma of the iris, in the area of the collarette, more abundant in the pupillary part. While they resembled Koeppe nodules in appearance, they were different in that there was no sign of uveitis, and that they did not lead to posterior synechiae. Four of the six cases showed other evidence of tuberculosis (scleritis, pulmonary involvement, and in one case choroiditis, both focal and disseminated). The other two showed no signs of general or local tuberculosis. The authors conclude that, while the presence of these granulations is suggestive, their exact significance cannot yet be determined, particularly since no histopathologic study has been made. (Colored plates.)

Derrick Vail.

Cecchetto, Ezio. **Paracentesis of the anterior chamber in various ocular diseases.** *Rassegna Ital. d'Ottal.*, 1939, v. 8, Jan.-Feb., p. 19.

Cecchetto reviews the history of paracentesis of the anterior chamber from the time of Galen. He then discusses the composition of the aqueous and its origin. The procedure has been found valuable in a great variety of pathological conditions, such as iritis, iridocyclitis, corneal diseases, retinitis pigmentosa, disorders of the circulation, and retinal separation. Twenty cases are reported in which paracentesis was performed one or more times.

Eugene M. Blake.

Ciotola, Guido. **The significance of follicular formations in the choroid resulting from inoculation of trachomatous material into the vitreous.** *Boll.*

d'Ocul., 1938, v. 17, Nov., pp. 929-941.

Into the vitreous of three series of rabbits, injections were made respectively of liquid obtained from centrifugation of trachomatous conjunctival material, from trachomatous material without centrifugation, and from non-trachomatous material (conjunctiva of dog; brain, liver, and spleen of guinea pig). Later these eyes showed signs of plastic endophthalmitis ending in atrophy of the eyeball. No follicular formation was found by microscopic examination of the eyes in the first series, while in eyes of the other series a lymphocytic infiltration was noted in the choroid and vitreous, in some places taking the shape of a true follicle. The writer believes that these follicular formations represent nonspecific reactions to the injected material acting as a foreign substance. (Bibliography, 7 figures.)

M. Lombardo.

Csillag, Ferenc. **Essential iris atrophy and glaucoma.** *Orvosi Hetilap*, 1939, v. 83, Jan., p. 85. (See *Amer. Jour. Ophth.*, 1939, v. 22, April, p. 461.)

Fixott, R. S. **Massive doses of foreign protein in intraocular infection.** *Northwest Med.*, 1939, v. 38, May 4, p. 165.

Two cases of exogenous uveitis each of which, through error, was treated with a single massive intravenous dose of 500 million typhoid organisms, are reported. Although marked, the reaction in neither case was alarming, and there was rapid resolution of the intraocular infection.

T. E. Sanders.

Heath, P., and Geiter, C. S. **Some physiologic and pharmacologic reactions of isolated iris muscles.** *Trans. Amer. Ophth. Soc.*, 1938, v. 36, pp. 213-

226. (See Amer. Jour. Ophth., 1939, v. 22, July, p. 791.)

Jaeger, Antoine de. **Three cases of Adie's syndrome.** Bull. Soc. Belge d'Ophth., 1938, no. 77, p. 118.

In pupillotomy, or the syndrome of Adie, the characteristic symptoms include mydriasis, suppression of the photomotor reflex (under ordinary conditions), and especially synergism of the convergence reflex which develops very slowly but progresses to a supranormal contraction persisting for some time (Saenger's type). The author believes that the great merit of Adie was his observation that in addition to pupillotomy there often exists absence of tendon reflexes and that the affection is not of a syphilitic nature.

The phenomena of the lesion are produced by disease of the functions of the midbrain. The etiology may be due to various causes. Adie and Behr believe that, in view of the negative humoral reactions, syphilis is never the causative agent. However, the author states that this does not constitute proof, because other cases of syphilitic origin, such as tabes, present negative serologic reactions. As a result of his observations the author concludes that Adie's syndrome is more frequent than one would think; that it is closely related to true tabes from the point of view of symptomatology; and that in pure form the prognosis is favorable (even more so than in other forms of pseudotabes). However, it is a symptom and not a disease, and only after examination by a neurologist and examination of the cerebrospinal fluid can one positively eliminate syphilis. (References.) J. B. Thomas.

Post, M. H. **Essential progressive atrophy of the iris.** Amer. Jour. Ophth., 1939, v. 22, July, pp. 755-759.

Streiff, E. B. **Moniliform pigmented streaks of the chorioretina.** Boll. d'Ocul., 1938, v. 17, Oct., pp. 801-815.

The history is given of three women of 60, 70, and 80 years respectively, affected by hypertension and arteriosclerosis. Two were myopic. Retinal arteries were contracted, choroidal vessels sclerosed, and above and along the latter were seen masses of granules of black pigment, each separated from the other like a rosary string. The streaks started near the disc, and pursued a linear course in the direction of the choroidal blood vessels. The retinal blood vessels passed over them. The author believes that a close etiologic relation exists between the condition of the choroidal vessels and these pigimentary changes. (Bibliography, 6 figures.) M. Lombardo.

8

GLAUCOMA AND OCULAR TENSION

Archangelsky, P. T. **Biomicroscopy of cicatrices after iridectomy and the operation of Elliot or of Heine.** Arch. of Ophth., 1939, v. 21, April, pp. 598-601.

Based on a biomicroscopic investigation of fifty cases treated by Elliot trephining, twenty by cyclodialysis, and a few cases by iridectomy, the author concludes that the mechanism of the reduction of intraocular tension is the same. The disposition of the vessels developing in the region of the cicatrix is similar to that observed around a foreign body or an infiltrate, and these vessels form the additional system for the outlet of the aqueous.

J. Hewitt Judd.

Buchanan, J. A., and Ballweg, H. A. **A case of myelogenous leukemia with glaucoma due to hemorrhage.** Amer.

Jour. Ophth., 1939, v. 22, July, pp. 770-774.

Ciotola, Guido. **Clinical observations on the behavior of ocular tonus in hypoglycemic coma.** Boll. d'Ocul., 1938, v. 17, Sept., pp. 738-754.

Ocular tension was studied in eleven patients subjected to insulin-shock treatment for schizophrenia. Results are given in tabulated form showing a hypotony in the majority of cases. The writer offers his explanation of the factors determining this hypotony which manifests itself in hypoglycemic coma less frequently than in diabetic coma. (Bibliography.) M. Lombardo.

Csillag, Ferenc. **Essential iris atrophy and glaucoma.** Orvosi Hetilap, 1939, v. 83, Jan., p. 85. (See Section 7, Uveal tract, sympathetic disease, and aqueous humor.)

Jackson, Edward. **Tonometry and unusual cases of glaucoma.** Amer. Jour. Ophth., 1939, v. 22, June, pp. 614-615.

Kaminskaja-Pavlova, Z. A. **The relation between intraocular tension and pupillary reaction to pain.** Viestnik Opht., 1939, v. 14, pt. 4, p. 29.

This investigation, made on 35 rabbits, consisted in pinching or pricking the skin of the nose at the exit of the branches of the nasal nerve, and recording immediately the pupillary reaction and the intraocular tension. The protocols show a raised intraocular tension in twenty cases, with a parallelism between the diameter of the pupil and the rise in tension. The rise in tension lasts from five to seven minutes, but the pupil contracts more rapidly. To throw some light on the genesis of these responses the author tested the effect of the aqueous of these eyes on the rhythm of the isolated

frog's heart. The kymograph tracings show an increase in the rhythm proportional to the rise in tension and the pupillary dilatation. The author believes that the active substances present in the aqueous are liberated by the vegetative innervation of the iris. (Kymograms.) Ray K. Daily.

Kirwan, F. O'G. **Treatment of epidemic dropsy glaucoma.** Calcutta Med. Jour., 1939, v. 35, April 1, pp. 274-277.

The main ocular complication of epidemic dropsy is bilateral glaucoma of the noninflammatory type, usually occurring as a late manifestation of the disease. This disease is thought to be due to eating infected rice or mustard oil, the toxin producing a general dilatation of the capillaries and an increased permeability of their endothelial walls. In an attempt to expel the toxin from the body purgatives and large amounts of fluids are administered and rice and mustard oil eliminated from the diet. The only drug of use is ephedrine in large doses by mouth, local treatment with miotics being useless. If visual-field defects appear, immediate operation is advised, a modification of the Lagrange being recommended. T. E. Sanders.

Reitsch, W. **Sclerenceleisis.** Klin. M. f. Augenh., 1939, v. 102, March, p. 326.

After detachment of a conjunctival flap a long scleral tongue is formed, 1.5 by 6 mm., and one half the thickness of the sclera. The base of it lies close to the limbus. The cornea is incised by shaving tracts subconjunctivally, and enlarging the incision to not more than 0.5 cm. The iris remains in situ. The scleral tongue is placed with a spatula in the corneal wound, and the conjunctiva is closed with two or three sutures. The four cases of

chronic absolute glaucoma operated upon by the author seem to prove that the implanted sclera prevents a permanent closure and secures a sufficient filtering opening for regulation of tension. C. Zimmermann.

Rubino, A. **Pressure and composition of the cerebrospinal fluid in patients with glaucoma.** *Rassegna Ital. d'Ottal.*, 1938, v. 7, Nov.-Dec., p. 721.

The author studied the physiopathology of glaucoma, using the bromine quotient of Walter. He concludes that three fundamental factors are concerned: (1) physiologic and partial permeability of the capillaries of the eye, (2) hydrostatic pressure of the intraocular capillaries, and (3) colloidal osmotic pressure of the blood and ocular fluids. All three of these factors are altered in glaucoma, by (a) increase of capillary permeability, (b) increase of hydrostatic intraocular pressure, and (c) decrease of colloid-osmotic pressure. Eugene M. Blake.

Schoenberg, M. J. **A case of recurrence of ocular hypertension eighteen years after an Elliot operation.** *Amer. Jour. Ophth.*, 1939, v. 22, July, pp. 774-777.

Shoji, Yoshiharu. **A method of sclerectomy and the results of 248 glaucoma operations.** *Arch. d'Ophth. etc.*, 1939, v. 3, March, p. 217.

Shoji's sclerectomy appears to be a combination of cyclodialysis and use of a scleral punch. The incision, beneath a conjunctival flap, is 2 mm. from the limbus and 2 to 3 mm. wide. Following a cyclodialysis through this opening, small vertical slits are made toward the limbus, and the included piece excised with the scleral punch.

The conjunctival flap is replaced and sutured. The results from this operation are compared with those from other operations for glaucoma, and conclusions are given regarding the operation of choice in various types of glaucoma. (Tables.) Derrick Vail.

Stein, Ludwig. **Left buphthalmos with hemihypertrophy of the left half of the face.** *Klin. M. f. Augenh.*, 1939, v. 102, April, p. 541.

This partial gigantism occurred in an otherwise healthy boy of eight years, and was attributed partly to unequal development of the blood vessels and partly to neurotrophic disturbances. As the hypertension did not decrease under miotics, trephining was done and the cornea became clear. C. Zimmermann.

9

CRYSTALLINE LENS

Agatston, S. A., and Gartner, S. **Precocious cataracts and scleroderma (Rothmund's syndrome; Werner's syndrome).** *Arch. of Ophth.*, 1939, v. 21, March, pp. 492-496.

The literature is reviewed and a case reported of this hereditary and familial disorder characterized by precocious development of bilateral cataract, early graying of the hair, scleroderma, premature senility, and various endocrine disorders. A history of consanguinity is usually found and the patients have a characteristic build: normal-sized trunk and small extremities. There is usually an early development of arteriosclerosis and hypertension. In addition to the usual findings, the case reported presented a fibroliposarcoma of the forearm. (Bibliography.)

J. Hewitt Judd.

Arruga, H. **Percentage of total extractions in cataract operations.** Ann. d'Ocul., 1939, v. 76, April, pp. 300-303.

Arruga reports 528 cataract extractions performed in various foreign countries during the past 2½ years, 501 of these being extracted in capsule, 27 extracapsularly. Five hundred were attempted with forceps, 28 with the suction cup. No mention is made of visual results or complications.

John M. McLean.

Basile, Giambattista. **Dinitrophenol cataract—experimental research.** Ann. di Ottal., 1939, v. 67, March, p. 223.

The author reviews the literature on dinitrophenol cataract. He administered this drug to a number of animals with the view of producing the form of cataract that had been observed in persons who had taken dinitrophenol for reduction of weight in obesity. In none were opacities found in the lenses, although there was a noticeable diminution in body weight of the animals examined. (Bibliography.)

Park Lewis.

Bertoldi, Maria. **Heterochromia iridis, cyclitis, and cataract.** Rassegna Ital. d'Ottal., 1938, v. 7, Nov.-Dec., p. 738. (See Section 7, Uveal tract, sympathetic disease, and aqueous humor.)

Braun, R. **The problem of diabetic lens changes.** Klin. Woch., 1939, v. 18, Feb. 11, pp. 209-213.

Among 600 diabetics the author found diabetic cataracts in three patients only. This type is different from the senile cataract, which develops in diabetics on an average of ten years earlier than in nondiabetics. The diabetic cataract develops in the young with a severe metabolic disturbance. It begins subcapsularly at the posterior

pole of the lens and progresses rapidly. In the early stages it is occasionally possible to arrest its progress or even to bring about a regression of the opacities by intensive insulin therapy. Its etiology is still obscure. We know, however, that neither the increased blood sugar nor the acetonuria plays an important part in its pathogenesis. The author suggests, as a possible etiologic factor, disturbance of the mineral and water balance, as emphasized by Gangström's theory, especially as he assumes that there is only a difference as to degree between diabetic cataract and the more frequent refractive changes in diabetics. He emphasizes the difficulty of animal and clinical experiment to support this theory. He was able to show by animal experiment, but not conclusively, that increase of sodium chloride in the blood was not followed by an appreciable increase in the sodium-chloride content of the aqueous.

The clinical experiment has to overcome the difficulty of reproducing in the healthy the disturbance of the mineral balance existing in the diabetic. In the normal individual any excess of sodium chloride is excreted instantly and the sodium-chloride content of the blood kept at a level. This mechanism can, however, be disturbed temporarily even in the normal individual, whenever the pancreas is overtaxed by high doses of dextrose. Experiments on normal individuals carried out under these precautions showed that no alterations of the refractive power of the lens could be produced.

Bertha A. Klien.

Bücklers, M. **Evolution and involution of diabetic cataract.** Klin M. f. Augenh., 1939, v. 102, April, p. 465.

In a man of fifty years a star-shaped

posterior cortical opacity observed at the beginning of diabetic treatment subsided within a few weeks. Simultaneously a transitory hypermetropia developed. Both processes were attributed to a transient absorption of water by the lens.

C. Zimmermann.

Crecchio, A. de. **Behavior of the water content of the crystalline lens in experimental cataracta parathyropriva.** Ann. di Ottal., 1939, v. 67, Jan., p. 59.

The experiments were made on rabbits. The eyes of the animals were examined under the slitlamp; subsequently the right eyes were enucleated and the water content of the lenses determined. Two or three days later the rabbits were parathyroidectomized after the Lo Cascio method.

Weekly examinations of the lenses were made with the biomicroscope. At varying periods of time after removal of the parathyroids the animals were destroyed and the lenses removed in capsule, after which the water content in each case was determined. The increase in the water content of the lens was constant and notable, 14.30 percent in all of the lenses examined. These observations confirm the hypothesis that at least in some degree the hydriotic mineral balance in the crystalline lens is disturbed in experimental parathyroprival cataract, and they are viewed as illustrating the Redox-potential phenomenon in the light of modern theories of electric dominance in a biologic sense. (Bibliography.)

Park Lewis.

Dollfus, M. A., and Tetreau, H. **A case of dolichostenomelia (Marfan's syndrome).** Bull. Soc. Belge d'Opht., 1938, no. 77, p. 33.

A typical case of Marfan's syndrome

in a boy sixteen years old. Father and grandfather gave a history of chronic alcoholism. The patient presented lesions of the zonules of both eyes with subluxation of the lenses. The basal metabolism was normal. Mentality was subnormal. There were slight development of the testicles and alopecia of the pubic and axillary regions. The association of dolichostenomelia with these developmental defects of the genital glands inclines the author to attribute a glandular and probably hypophyseal origin to Marfan's syndrome. (Illustrations.)

J. B. Thomas.

Fisher, W. A. **Senile cataract: the usual method of operating in India.** Amer. Jour. Ophth., 1939, v. 22, July, pp. 765-769.

Hambresin, L. **Again the intracapsular operation.** Bull. Soc. Belge d'Opht., 1938, no. 77, p. 91.

The author reviews the arguments for and against intracapsular extraction of the crystalline lens and describes at length his own operative methods. He finds it most effective to complete his anesthesia by retrobulbar injection of a small quantity (0.5 cc.) of a 2-percent solution of novocaine without adrenalin. He states that the whole secret of success with the intracapsular operation rests upon a corneal incision of not less than 180 degrees. The iridectomy must be broad. He makes no more than two attempts to remove the lens within the capsule, but if unsuccessful proceeds to perform the classical extracapsular operation. He believes it safest for both patient and operator that the latter should use the method with which he has had the most experience.

J. B. Thomas.

Horvath, R. **Cataract operation with scleral suture.** *Klin. M. f. Augenh.*, 1939, v. 102, April, p. 473. (See *Amer. Jour. Ophth.*, 1939, v. 22, July, p. 798.)

Hurtault, J., and Sverdllick, J. **Total extraction of complicated cataract in a case with occluded pupil.** *Arch. de Oft. de Buenos Aires*, 1938, v. 13, Oct., p. 507.

Case report of a complicated morgagnian cataract in which the pupillary space was occluded by a new membrane, presumably of inflammatory origin. After separation of posterior synechiae, combined intracapsular extraction was successfully performed through the small operative coloboma of the iris. Subsequent examination revealed the presence of a grayish membrane in the pupillary area. There was no appreciable visual improvement after operation, because of a diffuse exudative choroiditis.

Edward P. Burch.

Kwaskowski, Adam. **The hyaloid membrane after cataract extraction.** *Klinika Oczna*, 1939, v. 17, pt. 2, p. 205. (See Section 10, Retina and vitreous.)

Måhlén, Sven. **Tabulated ocular examinations of patients treated with dinitrocresol.** *Acta Ophth.*, 1939, v. 17, pt. 2, p. 215.

This is a tabulated report of a re-examination of patients reported upon in a previous article (see *Amer. Jour. Ophth.*, 1939, v. 22, p. 799).

Ray K. Daily.

Meyer, F. W. **Postoperative hemorrhages after cataract extraction and their causes.** *Klin. M. f. Augenh.*, 1939, v. 102, April, p. 479.

At the eye clinic at Freiburg, Meyer found that hemorrhages after intra-

capsular were from 34.4 percent to 22.8 percent more frequent than after extracapsular extraction. The hemorrhages rarely occurred during operation, usually three or four days afterwards. Twenty-three percent occurred in men, 20.2 percent in women. Seasons had no influence. The possibility of small blood vessels being torn as a result of vitamin-C deficiency was tested in 35 cataract patients; no definite result was found, nor had intravenous calcium injections any effect. Emphysema was reported in 25.6 percent. A case of expulsive hemorrhage showed signs of arsenic poisoning; and since arsenic is used very much in the viticulture of that region and is consumed daily with large quantities of wine, its influence on the blood vessels is suggested. In some of the cases the hemorrhages could be ascribed to toxic disintegration of the capillary walls.

C. Zimmermann.

Müller, H. K. **A. Vogt's criticism of my paper "On genesis of senile cataract."** *Klin. M. f. Augenh.*, 1939, v. 102, March, p. 378.

A reply and correction of Vogt's criticism (*Amer. Jour. Ophth.*, 1939, v. 22, Feb., p. 230).

Noisewska, Kazimiera. **Biomicroscopy of secondary cataract.** *Klinika Oczna*, 1939, v. 17, pt. 2, p. 175.

The material studied consisted of secondary cataracts in 22 cases of senile and four cases of zonular cataract. The findings in 11 cases are described in detail. The conclusions are that the examination reveals the cause of diminished visual acuity, visualizes the constituent elements of the secondary cataract, differentiates an opaque hyaloid membrane from a secondary cataract, and facilitates the selection of the

most favorable site for discission. (Illustrations.)
Ray K. Daily.

Reese, A. B. **Operative treatment of radiation cataract.** Arch. of Ophth., 1939, v. 21, March, pp. 476-485; also Trans. Amer. Acad. Ophth., and Otolaryng., 1938, 43rd mtg., p. 177.

As a basis for this report 112 eyes with radiation cataract were examined, and 25 eyes operated upon. Intracapsular extraction was done on sixteen, extracapsular extraction on six, and linear extraction on three. The histologic findings in the sixteen lenses removed in capsule are summarized and illustrated by photomicrographs. In cataracts caused by irradiation there is a tendency toward proliferation of the epithelium under the anterior capsule into a metaplastic fibrous layer. The anterior capsule is thus strengthened so that this type of cataract is particularly suitable for intracapsular extraction. Extracapsular extraction in such cases is contraindicated because the lens epithelium remaining after the nucleus is extracted may continue to proliferate and form dense fibrous tissue, which tends to produce iridocyclitis and secondary glaucoma. Some senile and some complicated cataracts also show a fibrous metaplasia of proliferated epithelium under the anterior capsule. This can be detected clinically even in the lesser degrees and is a factor in the successful removal of the lens in capsule. (Discussion.)

J. Hewitt Judd.

Tron, E. J. **Studies on the chemical and physicochemical topography of the lens.** Viestnik Opht., 1939, v. 14, pts. 2-3, p. 59, and pt. 4, p. 6.

This laboratory investigation on oxen's eyes consisted in determining the changes produced by immersion of

the lenses in hypertonic salt solution, and in a solution of copper sulphate. The experimental saline opacities differ on the two lenticular surfaces. In the early stages large vacuoles are formed on the anterior lens capsule, and only fine transitory vacuoles on the posterior lens capsule. In the later stages the process varies on the two surfaces in intensity and extent. The opacities caused by immersion in copper sulphate consist of precipitated albumin, and they differ on the two surfaces in morphology, in time of appearance, and rapidity of growth. In partial removal of the lens capsule the changes in places denuded of the capsule were different from those formed in the presence of the capsule. Studies of the physicochemical properties of the lens show that the two capsules differ in permeability, in water and calcium content, and in the rate of dehydration and precipitation of albumin.

Ray K. Daily.

Vogt, A. **Remarks on H. K. Müller's "A. Vogt's criticism of my paper on the genesis of senile cataract presented at Heidelberg."** (See above.) Klin. M. f. Augenh., 1939, v. 102, March, p. 383.

10

RETINA AND VITREOUS

Bedell, A. J. **Traumatic retinal angiopathy.** Trans. Amer. Ophth. Soc., 1938, v. 36, pp. 188-198.

Three previously unreported cases of traumatic retinal angiopathy are presented by the author with a complete color-photograph record of one case. The literature is reviewed and the types of cases, differential diagnosis, and etiology are discussed.

David O. Harrington.

Bencini, Alberto. **Bipolar electrolysis in the treatment of retinal detachment.** Boll. d'Ocul., 1938, v. 17, Sept., pp. 693-710.

The author reports eight cases of retinal detachment in which perforating bipolar electrolysis was used, the anode or active pole being 1.5 to 2 mm. distant from the inactive pole. A 20-ma. current was used for eight or ten seconds. Postoperative reaction was mild. The patients were from 22 to 56 years of age, and the duration of the detachments varied from nine days to five months. The detachments were of the diffuse type, not prominent. Six of the cases showed retinal tears, and in five cases the recovery was complete as seen from five to eighteen months after the operation. (Bibliography, 3 figures.) M. Lombardo.

Biró, Emeric. **The relationship of endocrinology to retinitis pigmentosa.** Ann. d'Ocul., 1939, v. 76, April, pp. 293-297.

A brief review of the literature on the relationship of the endocrines to retinitis pigmentosa. Most of the evidence points to the pituitary as a major factor, particularly since it is known to be involved in some of the concomitants of retinitis pigmentosa, such as adiposogenital dystrophy and mental retardation. Some workers have also tried to implicate the gonads, thyroid, parathyroids, and liver. Ovarian extract seems to have shown some promise in therapy. John M. McLean.

Biró, Imre. **Therapeutic experiments in cases of retinitis pigmentosa.** Brit. Jour. Ophth., 1939, v. 23, May, pp. 332-342.

This is an abstract of an address supplementing one given in 1934. The article describes the author's experience

with the use of three drugs: sexual hormones, amyl nitrite, and liver extract. Twenty-five patients, having been under observation for many years, were treated for the disease during the period from 1932 to 1938. Tables are presented to show visual acuity before and after treatment. The author finds none of the drugs to be specific for the disease, the true therapy remaining beyond present knowledge. (Tables. Figures.)

D. F. Harbridge.

Böck, Josef. **Clinical and anatomic findings as to opticociliary arteries.** Klin. M. f. Augenh., 1939, v. 102, April, p. 529.

The predominating number of known opticociliary vessels are veins, while opticociliary arteries have been reported only four times. These are twigs of a branch of the central retinal artery which at the border of the disc turn into the deeper tissues. Böck ophthalmoscopically found opticociliary arteries three times in two patients and examined one of these eyes anatomically, thus being able to pursue the further course of the artery. In the right eye of one case the unusually large central artery coursed over the disc into the retina where it formed an arc and returned to the disc margin at which point it turned downward. The second case gives the first anatomic findings of an ophthalmoscopically visible opticociliary artery. The large central artery takes an atypical course and establishes communication with the ciliary vascular system.

C. Zimmermann.

Bruce, G. M. **Retinitis in dermatomyositis.** Trans. Amer. Ophth. Soc., 1938, v. 36, pp. 282-297.

The literature on dermatomyositis is

very completely reviewed and the disease described. Three cases are reported having an unusual form of retinitis identical in appearance and behavior. Although other ocular signs have been noted in this disease, involvement of the retina has never been reported. David O. Harrington.

Contino, F. **The question of the visibility of the hyaloid canal.** *Ann. di Ottal.*, 1939, v. 67, Jan., p. 38.

About the middle of the last century Meissner observed an abnormality in the ocular fundus which he rightly interpreted as a vascular rest in the development of the vitreous. Since that time numerous clinicians have reported similar defects in which the hyaloid artery remained more or less as a functioning structure or became obliterated, leaving a persistent hyaloid canal. In accord with more modern scientific research the author proposes to consider the phenomenon as due to visibility of the canal of Cloquet. (This canal, while not normally visible under the slitlamp, may become so as a result of trauma or of intraocular hemorrhage.) He reviews under four groups the observations of other writers who have noted various forms of this morphology, and describes two cases. In one of these a hemorrhage into the vitreous was succeeded, as the blood was absorbed, by a peripapillary membranous formation extending forward to the postlenticular space. The second case was that of a child with exceedingly high myopia, in whom a lead-colored cylindrical cord extended from the posterior pole of the eye to the back of the lens. Its oscillation indicated a fluid vitreous. (Bibliography, 2 colored plates.) Park Lewis.

Filatov, V. P., and Verbitzkaja, E. **A. Treatment of retinitis pigmentosa**

with intramuscular injections of cod-liver oil. *Viestnik Opht.*, 1939, v. 14, pt. 4, p. 21.

Six brief clinical histories illustrate the effectiveness of parenteral cod-liver oil injections. The result manifests itself by improvement in light sensitivity as well as in visual acuity. The authors believe that the cod-liver oil effect is due not only to its vitamin content, but also to its influence on liver metabolism. (Visual fields.)

Ray K. Daily.

Fritz. **The treatment of functional troubles of the retinal circulation.** *Bull. Soc. Belge d'Opht.*, 1938, no. 77, p. 62.

The writer divides his methods of treatment into those that increase the perfusion of the retinal capillaries and those that lower excessive pressure. The former are further divided as to effects on the general circulation and effects on the retinal and intracranial circulation. The retinal circulation may be treated with general vasodilators administered by mouth or inhalation, or in other ways, or by local means such as miotics, ocular massage, and subconjunctival or retrobulbar injections. These local injections exert an important effect on the retinal circulation. The retinal vessels will not tolerate (without occurrence of edema, exudates, or hemorrhages) a capillary perfusion capable of allowing venous pulsations to persist beyond 100 mm. Hg of compression. Therapeutic measures that exceed this limit invariably cause accidents. In case of the injection of vasodilators the accident may tend to be localized in the eye. In treatment with ultrashort waves there is reason to fear that the effect may extend to the brain. Sphygmometric observations of the retina alone are capable of indicating the effects of treatment, so as to

control the intensity of the waves and thus insure safety. J. B. Thomas.

Graf, Cornélie. **Detachment of the vitreous body.** Arch. d'Ophth. etc. 1939, v. 3, April, p. 314.

Thirty-eight cases (46 eyes) showing this condition were carefully studied and tabulated. It was present in 28 myopes, 7 emmetropes, and 3 hypermetropes, and was unilateral in 30 cases. It was most frequently seen in patients between fifty and sixty years old. Posterior detachment was most frequent (37 eyes). An oval or annular tear in the vitreous, varying in size, was frequently found. It is supposed that the tears come from the circumference of the papilla, but the author believes that the localization of the detachment has no influence on the form of the tear. Recent tears look like openings in a thin veil; after a time the edges contract, fold, and take the form of a band. Meshes and filaments are found in the margin, while the rest of the membrane has lost its tension, floating about more easily. Later the vitreous liquefies. Recent tears are always inclined in such a way that their superior border is directed forward, their lower border backward. The author dissents from the usual belief that detachment of the vitreous leads to that of the retina. (Illustrations, table, bibliography.) Derrick Vail.

Greig, M. E., Munro, M. P., and Elliott, K. A. C. **The metabolism of lactic and pyruvic acids in normal and tumor tissues. 6. Ox retina and chick embryo.** Biochem. Jour., 1939, v. 33, April, p. 443.

Metabolism by the ox retina of lactate and pyruvate and various other compounds was studied. Oxidation in the retina is different from that in tis-

sues previously studied, such as the rat kidney. T. E. Sanders.

Jeandelize, P., Bretagne, P., Druesne, and Thomas, C. **Retinal periphlebitis with hemorrhages and endocrine disturbances.** Bull. Soc. Belge d'Ophth., 1938, no. 77, p. 40.

The authors report a case of retinal periphlebitis with multiple retinal hemorrhages in a woman aged thirty years who had a history of pulmonary tuberculosis (apparently healed), ovarian insufficiency, and hyperpituitarism. The question arises whether in certain cases of tuberculous periphlebitis there may not coexist an unrecognized endocrinopathy. The authors disclaim the idea of considering only the glandular point of view. There are the recurrent hemorrhages of juvenile retinal angiopathy, the obliterating thrombo-angiitis of Buerger, the recurrent hemorrhages of diseases of the blood and of various infections. The case under consideration, with its two possible etiologies, far from weakening the endocrine thesis, seems on the contrary to reinforce it and give it a more important basis of generalization.

J. B. Thomas.

Koch, F. L. P., and Walsh, M. N. **Syndrome of tuberous sclerosis.** Arch. of Ophth., 1939, v. 21, March, pp. 465-475.

The authors review the literature and report the case of a boy aged seventeen years who presented findings typical of this condition, which is characterized by retarded mental development, epileptiform seizures, and tumors in one or more organs, usually the skin, brain, eye, liver, kidneys, heart, or occasionally the stomach. In this case the bilateral retinal tumefactions were associated with symmetrically distri-

buted lesions of adenoma sebaceum and a large calcified intracranial tumor probably invading the third ventricle. The etiology of tuberous sclerosis is unknown but the condition is probably hereditary. The classification of the retinal tumors is uncertain but they are likely astroblastic in origin, and therefore should be of a low degree of malignancy.

J. Hewitt Judd.

Kwaskowski, Adam. **The hyaloid membrane after cataract extraction.** *Klinika Oczna*, 1939, v. 17, pt. 2, p. 205.

Review of the literature and description of the biomicroscopic appearance of the hyaloid membrane, posterior lens capsule, and complicated and uncomplicated vitreous hernia, as seen in 45 postoperative cases. (Illustrations.)

Ray K. Daily.

Leinfelder, P. S. **Retrograde degeneration in the optic nerves and retinal ganglion cells.** *Trans. Amer. Ophth. Soc.*, 1938, v. 36, pp. 307-315. (See Section 11, Optic nerve and toxic amblyopias.)

Levitt, J. M., and Lloyd, R. I. **Congenital prepapillary cyst containing a moving vascular loop.** *Amer. Jour. Ophth.*, 1939, v. 22, July, pp. 760-764.

Levy-Wolff, Lizzie. **Pathogenesis of retinitis pigmentosa.** *Acta Ophth.*, 1939, v. 17, pt. 2, p. 192.

The author contends that retinitis pigmentosa is but a symptom of disturbed cerebral circulation; the process is that of a malignant angiosclerosis, initially of a nervous spastic type. The degeneration of the retinal ganglion cells is secondary to the progressive ischemia, caused by a disturbance in the sympathico-vegetative center in the

midbrain. The amaurotic idiocy of Spielmeier-Vogt type is a variant of the same disease. The amorphous pigment in the equatorial region is a symptom of sclerosis in the choriocapillaris and the bone corpuscles indicate retinal involvement. The ring scotoma is the characteristic sign of the disease and represents a variant of bitemporal hemianopsia.

Ray K. Daily.

Muncaster, S. B., and Allen, H. E. **Bilateral uveitis and retinal periarteritis as a focal reaction to the tuberculin test.** *Arch. of Ophth.*, 1939, v. 21, March, pp. 509-511. (See Section 7, Uveal tract, sympathetic disease, and aqueous humor.)

Paterakis, Emanuel. **Retinal angiospasm.** *Arch. d'Ophth. etc.*, 1939, v. 3, Feb., p. 112.

Angiospasm is always a symptom, whether its cause be known or unknown. This symptom may be essential (spasm without apparent lesions), or secondary (spasm of hypertensive origin, arterial disease).

From a pathogenic viewpoint, it is necessary to distinguish: (1) reflex spasms of local origin (a good example of this form being the spasm observed in the evolution of a thrombosis of the central retinal artery); (2) spasms of general cause, the mechanism of which is almost unknown. One may admit the existence of spasm as a result of local reaction, variations of pressure (hyper or hypo), generalized sympathetic disturbance, or irritation of a humoral substance, but it is always necessary to explain the retinal localization. Therefore in the present state of our knowledge, classification is impossible. The prognosis in most of the cases is favorable and depends on the intensity and duration of the spasm. The treatment is

symptomatic and causal. (Bibliography.)
Derrick Vail.

Puntenney, Irving. **Effect of certain chemical stimuli on the caliber of the retinal blood vessels.** Arch. of Ophth., 1939, v. 21, April, pp. 581-597.

The method described by Lambert was utilized for photographing, in the living animal, alterations in the caliber of the retinal blood vessels caused by the administration of certain drugs. Injections of epinephrine hydrochloride into sixteen dogs produced a questionable dilatation of the artery in two animals, with an increase in the caliber of the veins in seven. Nitrites were administered to seven dogs with negative results. Injections of mecholyl into twenty dogs produced a decrease in the caliber of the vessels in eleven and an increase in one. Ethyl ester of betamethylcholine was injected into two dogs, with no response. No increase in the caliber of the vessels was found after paracentesis. The author questions the efficacy of treating occlusion of the central arteries with vasodilators.
J. Hewitt Judd.

Riser, Couadau, Planques, and Valdiguié. **Ophthalmoscopy in the hypertensive diseases.** Ann. d'Ocul., 1939, v. 76, April, pp. 252-274.

The value of ophthalmoscopic examination in cases of hypertension cannot be overemphasized. All the vascular and tissue lesions seen in arterial hypertension are reflected in the eye-grounds, and similarly all the fundus lesions have their counterparts elsewhere in the body. Red and white infarcts and areas of aseptic necrosis are seen similarly in brain, kidney, and heart. Central venous thrombosis in the retina corresponds to apoplectic lesions; retinal edema to cerebral edema.

In more than two thirds of the cases of low-grade papilledema and nearly all the cases of marked edema, increased intracranial pressure is present. The development of intracranial hypertension is an important event definitely modifying the prognosis. If one is to recognize the entity of malignant hypertension one must realize that edema of the disc often precedes the nephritis. It is not always possible to interpret choked disc in a patient with hypertension on the ophthalmoscopic picture alone. Neurologic, general medical, and laboratory examinations are indispensable.
John M. McLean.

Salus, Robert. **The fundus oculi in generalized hypertension and arteriosclerosis.** Arch. of Ophth., 1939, v. 21, March, pp. 505-508.

The alterations in the fundus due to arteriosclerosis and hypertension are briefly discussed and their prognostic importance outlined. It is pointed out that the crossing arch often called "Salus' symptom" was first described by Marcus Gunn and is absolute proof of hypertension.
J. Hewitt Judd.

Schmidt, Rolf. **Hole formations in the center of the retina.** Klin. M. f. Augenh., 1939, v. 102, April, p. 521.

Schmidt reports the clinical histories of fourteen cases of central hole formations of the retina in a total of 200 retinal detachments. In nine of the fourteen cases detachment was absent or was limited to the fovea centralis. In all fourteen cases the fundus picture remained essentially stationary. Since even the most successful operation does not restore central vision, and since even without treatment no deterioration of the condition and function of the eye occurs in most patients, no operation is indicated in macular holes

which do not entail a detachment beyond the wall of the fovea.

C. Zimmermann.

Streiff, E. B. **Moniliform pigmented streaks of the chorioretina.** *Boll. d'Ocul.*, 1938, v. 17, Oct., pp. 801-815. (See Section 7, Uveal tract, sympathetic disease, and aqueous humor.)

Stromburg, Günter. **Familial occurrence of chronic inflammatory chorioretinitis.** *Klin. M. f. Augenh.*, 1939, v. 102, April, p. 544.

Atypical chorionuroretinitis occurred in a father, his oldest son, and a daughter. In all three a gradually increasing deterioration of vision commenced in early youth. The father became blind at 44 years of age and the son partially blind at 27 years; the daughter at 18 years could count fingers at 0.5 meter. Ophthalmoscopically the discs were pale and atrophic, the blood vessels tortuous and showing grayish-white sheaths of infiltration, and there were fine displacements of pigment. The daughter presented commencing central degeneration of the retina. The vascular changes in the son and daughter were similar to periphlebitis proliferans. There were no signs of tuberculosis and Wassermann reactions were negative. C. Zimmermann.

Urechia, C. I., Vancéa, P., and Dragomir, L. **Laurence-Moon-Bardet-Biedl disease.** *Ann. d'Ocul.*, 1939, v. 76, April, pp. 274-293.

A typical case of this syndrome is reported. The complete syndrome includes: retinitis pigmentosa, polydactylism, adiposogenital dystrophy, mental retardation. Incomplete forms of the disease are also seen. (Bibliography.) John M. McLean.

Vogt, Alfred. **Further observations of pigment lines of demarcation around retinal pigment tears.** *Klin. M. f. Augenh.*, 1939, v. 102, April, p. 517.

Vogt demonstrated on several cases a dark zone of demarcation in the retina due to proliferation of pigment at the border of the detachment. This is interpreted as an expression of spontaneous tendency to healing in detachment of the retina.

C. Zimmermann.

Vogt, Alfred. **Large hemorrhages in the vitreous from retinal tears.** *Klin. M. f. Augenh.*, 1939, v. 102, April, p. 516.

An emmetropic man of 65 years suffered an intraocular hemorrhage upon violently blowing his nose, a few weeks after a fall on his head. Two months later Vogt found a covered hole of the retina. The cover contained a retinal vessel which had been ruptured in tearing off the cover. The tear was closed by catholysis and diathermy.

C. Zimmermann.

Vogt, Alfred. **Photograph of a honey-combed macula in juvenile retinitis pigmentosa.** *Klin. M. f. Augenh.*, 1939, v. 102, April, p. 519.

Cystoid degeneration of the macula was known histologically before being seen by redfree ophthalmoscopy. The present photograph shows the yellow zone of the cyst walls as proof of the yellow color of the living macula.

C. Zimmermann.

Weve, H. **Congenital aphakia with hyaloid artery and retinal fold.** *Ophthalmologica*, 1939, v. 97, May, p. 79.

The author briefly describes and illustrates the fundus of an eye which had a well-marked persistent hyaloid artery and retinal fold. The eye had

shown convergent squint since birth. All transitions between simple persistent hyaloid artery and so-called pseudoglioma caused by congenital retinal detachment have been found.

F. Herbert Haessler.

Winther, Erik. **Abnormal course of retinal blood vessels of the same type found in a father and his son.** *Acta Ophth.*, 1939, v. 17, pt. 2, p. 236.

The presence of cilioretinal arteries and optic marginal veins in father and son suggests that these anomalies may be hereditary. A review of the literature. (Illustrations.) Ray K. Daily.

11

OPTIC NERVE AND TOXIC AMBLYOPIAS

Donahue, H. C. **Neuromyelitis optica.** *Amer. Jour. Ophth.*, 1939, v. 22, June, pp. 661-663.

Johnson, L. V. **Alcohol-tobacco (toxic) amblyopia treated with thiamin chloride.** *Arch. of Ophth.*, 1939, v. 21, April, pp. 602-603.

In a series of five cases, treatment with thiamin chloride (vitamin B₁) gave marked clinical improvement. Sufficient studies were not made to ascertain the therapeutic value of nicotinic acid.

J. Hewitt Judd.

Koff, Raphael. **Gumma of the optic papilla.** *Amer. Jour. Ophth.*, 1939, v. 22, June, pp. 663-665.

Krause, A. C. **The biochemistry of the optic nerve.** *Trans. Amer. Ophth. Soc.*, 1938, v. 36, pp. 297-307.

An investigation of the chemical constitution of the optic nerve, in which the quantities of the proteins, lipids, and water-soluble extractives were es-

timated. Their relation to the physiology of the optic nerve is discussed.

David O. Harrington.

Leinfelder, P. S. **Retrograde degeneration in the optic nerves and retinal ganglion cells.** *Trans. Amer. Ophth. Soc.*, 1938, v. 36, pp. 307-315.

Electrolytic section of the optic nerve anterior to the chiasm resulted in retrograde ganglion-cell and nerve-fiber degeneration. Retrograde ganglion-cell degeneration occurred after section of both optic tracts. Little or no degeneration was seen in the optic nerves after section of one or both optic tracts or of the chiasm in the midline.

David O. Harrington.

Marcos, V., and Lijo Pavia. **The eyeground in cerebellar heredoataxia. Its importance for early diagnosis.** *Trabalhos do Primeiro Cong. Brasileiro de Ophth.*, 1936, v. 2, pp. 430-434.

The authors report the cases of three brothers, the first two showing advanced characteristic symptoms of cerebellar heredoataxia, including atrophy of the optic nerve. The third showed only beginning optic atrophy, with no symptoms of the disease elsewhere. The authors agree with Sanger Brown that the ocular findings, besides being of great diagnostic value, are very early in appearance, and therefore represent one of the most important signs in diagnosing the disease.

Ramon Castroviejo.

Orzalesi, Francesco. **Retinal arterial pressure in alcohol-tobacco amblyopia.** *Boll. d'Ocul.*, 1938, v. 17, Nov., pp. 889-897.

The general arterial pressure, the retinal diastolic arterial pressure, and the ocular tension are given in tabular form for sixteen patients with this

form of toxic amblyopia. These cases have a tendency to retinal hypotension; some show a relative retinal hypotension and only a few a relative hypertension. From these findings the writer is not inclined to favor a vascular theory on the genesis of the optic atrophy in such cases; the relative ischemia and the pressure changes are not manifest enough to cause atrophy of the papillomacular fibers. (Bibliography.) M. Lombardo.

Rubino, A. **Beneficial effects of intravenous iodine therapy in certain affections of the optic nerve.** Ann. di Ottal., 1939, v. 67, Feb., p. 140.

In various forms of retrobulbar neuritis as well as opticochiasmatic arachnoiditis, the author reports beneficial results from iodine therapy administered intravenously. Park Lewis.

Santoni, Armando. **Primary glioma of the optic nerve.** Boll. d'Ocul., 1938, v. 17, Nov., pp. 942-957.

A girl of 10 years developed left exophthalmos at the age of 2 years. At 4 years, after a fall causing rupture and emptying of the eyeball, the eye appeared as a small atrophic structure situated in front of a soft elastic mass filling the entire orbit. Histologic examination showed the mass to be limited by a capsular formation and composed of gliomatous tissue with myxoid degeneration and cystic softening, originating from the optic nerve. (Bibliography, 7 figures.) M. Lombardo.

12

VISUAL TRACTS AND CENTERS

Fanchamps, Jacques. **Traumatic lesions of the chiasm.** Bull. Soc. Belge d'Opht., 1938, no. 77, p. 126.

Two cases of fracture of the orbit with lesions of the chiasm are reported.

The fact that such cases are very rare is accounted for by the location of the chiasm in the depths of the skull. (5 references.) J. B. Thomas.

Harrington, D. O. **Localizing value of incongruity in defects in the visual fields.** Arch. of Ophth., 1939, v. 21, March, pp. 453-464.

Careful quantitative perimetric studies are of great value in localizing cerebral lesions not only laterally but dorsoventrally, since asymmetry of incomplete homonymous hemianopsic defects in the visual fields is regularly present in lesions of the temporal lobe and decreases in amount the farther back the lesions are in the visual pathway. In occipital lesions the congruity of the field defect becomes absolute, extending even to minute irregularities. These defects are thought to be due to the dissociation in the temporal lobe of homologous fibers from corresponding retinal points and their gradual coalescence in the postparietal area. Ten cases are reported as examples of the findings in the various regions. J. Hewitt Judd.

Kanzer, M., and Bender, M. B. **Spatial disorientation with homonymous defects of the visual field.** Arch. of Ophth., 1939, v. 21, March, pp. 439-446.

This condition was found in a patient with an infiltrating spongioblastoma multiforme in the right temporal lobe and with probable extension into adjacent areas. The "spatial agnosia" associated with a left homonymous hemianopsia produced a spontaneous tendency for the patient to direct the visual attention to the right and to ignore objects on the left. An abnormal perception of visual configuration resulted, with the patient having a tendency to "confabulate" about the per-

ception of objects toward the side of defective vision, indicating that apparently a remnant of vision was preserved in this field. J. Hewitt Judd.

Traquair, H. M. **The field of vision and the anatomy of the visual nerve path.** *Edinburgh Med. Jour.*, 1939, v. 46, Feb., pp. 83-94.

The anatomic structure and relationships of the visual pathway are reviewed in detail, with excellent correlation of the structure with defects in the visual fields as produced by clinical lesions at the various levels.

T. E. Sanders.

13

EYEBALL AND ORBIT

Butler, T. H. **A case of postoperative endophthalmitis cured by prontosil.** *Trans. Ophth. Soc. United Kingdom*, 1938, v. 58, pt. 1, p. 337.

A patient seventy years of age had the left lens extracted by the combined method and was discharged 21 days later. Ten days later there was some reaction, and 17 days later no corneal precipitates were present but the anterior chamber was filled with masses of dense yellowish exudate like a thick hypopyon. He was readmitted to the hospital and put on atropine and four tablets of white prontosil (sulphanilamide) four times a day. Three days later there was marked improvement, and ten days later the exudate had disappeared and the iris was free of injection. The capsular membrane was opened two months later and the eye remained free from injection with corrected vision of 6/12.

Beulah Cushman.

Ciotola, Guido. **Microphthalmos and finger, malformations.** *Boll. d'Ocul.*, 1938, v. 17, Oct., pp. 855-867.

A boy of two years, affected by left microphthalmos with signs of an old inflammatory process of the iris, showed also a polydactylism (six fingers) on the left and cryptorchidism on the same side. A girl of one year showed a right microphthalmos, coloboma of the iris and choroid, and bilateral syndactylism, the first two phalanges of the index and third fingers being united by a skin fold. In discussing the pathogenesis of the defects, the writer excludes an endocrine dysfunction because of the unilaterality of the lesions. The cryptorchidism of the first case would speak rather for delayed development. (Bibliography.)

M. Lombardo.

Czokrász, Ida. **Epithelial inlay with Kerr material to form an eye socket.** *Brit. Jour. Ophth.*, 1939, v. 23, May, pp. 343-347.

Two cases are reported in which a Kerr-material mold was used to hold in place the epithelial graft lining the eye socket. The Kerr material is a plastic which may be softened in hot water, molded into the socket, and allowed to harden at body temperature. This type of plastic operation is recommended because of its wide adaptability and simplicity of performance. (Illustrations, references.)

D. F. Harbridge.

Fine, Max. **Gumma of the orbit.** *Amer. Jour. Ophth.*, 1939, v. 22, June, pp. 595-602.

Janson, E. **Orbito-palpebral cysts in microphthalmos.** *Klin. M. f. Augenh.*, 1939, v. 102, March, p. 328.

A woman of 38 years had had since birth a tumor in the right lower lid which had recently increased in size. The patient wished to have it removed

on account of disfiguration. Under local anesthesia, through an incision along the lower orbital margin, the cyst was dissected as far as the apex of the orbit and excised. It consisted of a thin vesicle filled with fluid and a solid stalk which was severed from the microphthalmic eyeball in the depth of the orbit. It contained fine fibers of connective tissue with glandular and tubular tracts and its walls showed cylindric epithelium, essentially glial tissue. Orbitopalpebral cysts must be classed in the group of malformations arising from incomplete closure of the medullary tube with subsequent faulty differentiation. Spina bifida and syringomyelia are further examples. Orbitopalpebral cysts are analogous to malformations and tumors of the glioma group developing in the ventricular ependyma of the brain.

C. Zimmermann.

Krause, A. C., and Weekers, R. **Formic acid of ocular tissues.** Arch. d'Ophth. etc., 1939, v. 3, March, p. 225.

A method of determining the amount of formic acid present in the cornea, iris, lens, vitreous, retina, choroid, sclera, and optic nerve is described. The possible role of formic acid in the metabolism of the hydrocarbons of the lens is briefly discussed. (Table, bibliography.)

Derrick Vail.

Meller, J. **Metastatic purulent uveitis of tuberculous origin.** Wiener klin. Woch., 1939, v. 52, June 9, pp. 545-546.

The left eye of a 48-year-old, kyphoscoliotic patient became spontaneously violently inflamed. Several weeks after the onset of the attack the vision was completely destroyed, and there were hypopyon and beginning tenonitis, which necessitated enucleation. The clinical diagnosis was of metastatic

ophthalmia of the type produced by streptococcal infection of unknown origin. The possibility of a tuberculous origin was also considered, as tuberculin tests (tebeprotein) and the complement fixation test for tuberculosis were positive.

In the histologic sections an extensive exudative process of nonspecific type prevailed, associated with extensive necrosis of retina, uvea, and sclera. In the neighborhood of these necrotic areas in the iris and ciliary body there were also small nodular excrescences composed of epithelioid cells. In these sections large numbers of tubercle bacilli were found by the Ziehl-Neelsen method. They were arranged in heaps within the necrotic detritus, especially along the pigment epithelium. This case illustrates that in acute, purulent, metastatic ophthalmia a tuberculous origin cannot be excluded.

Bertha A. Klien.

Meller, J. **Positive result of tissue culture in search for tubercle bacilli in an atrophic globe after a spontaneous iridocyclitis, and with atypical histologic findings.** Wiener klin. Woch., 1939, v. 52, April 14, pp. 349-351.

In an atrophic bulb without outward signs of inflammation the histologic examination revealed thick cyclitic membranes and their consequences. These indicated an atrophy following a severe, chronic iridocyclitis, with disseminated, nonspecific, fresh foci of round-cell infiltration throughout the uveal tract. Large parts of the eyeball were used for tissue cultures in search for tubercle bacilli. The cultures were positive.

Deductions by the author from the findings in this eye are: (1) that the tubercle bacillus may be present in a clinically entirely quiescent eye, and

(2) that tubercle bacilli may be present in an eye without the formation of typical tuberculous granulation tissue. Thus, lack of specific infiltration in the histologic specimen does not exclude the tuberculous nature of an inflammatory process.

Bertha A. Klien.

Walker, G. L. **Fusospirochetal infection of the eye and orbit.** *Amer. Jour. Ophth.*, 1939, v. 22, June, pp. 622-625.

Wauters, M., and Delcourt, R. **Intra-orbital granuloma probably mycotic in nature.** *Bull. Soc. Belge d'Opht.*, 1938, no. 77, p. 165.

A case report with two photomicrographs.

Weve, H. **Evisceration with excision of the scleral sac.** *Ophthalmologica*, 1939, v. 97, April, p. 26.

Necrosis of the sclera is very common after exenteration of the eyeball in panophthalmitis, and this complication may prolong the healing time tremendously. To avoid it, the author advises excision of the sclera just anterior to the optic nerve. This is easy to do after evisceration if one first cuts the four straight recti at their insertions precisely as in preparing for enucleation.

F. Herbert Haessler.

14

EYELIDS AND LACRIMAL APPARATUS

Agnello, F. **Angioneurotic edema and allergic conjunctivitis.** *Boll. d'Ocul.*, 1938, v. 17, Oct., pp. 878-884.

Since her youth, a woman of 75 years had been hypersensitive to different stimuli, with manifestations of asthmatic cough, paroxysmal tachycardia, and urticaria. Recently, during the cold months she was subject to repeated attacks of edema of the eyelids accom-

panied by intense itching and lacrimation. The palpebral conjunctiva was hyperemic and showed numerous follicles. After a discussion on the etiology and pathogenesis of these anaphylactic disturbances, the author concludes that in this case the only causative element to be considered is the acquired hypersensitivity to cold weather.

M. Lombardo.

Bello, Domenico. **Morphologic and etiologic genesis of oblique fissures of the face.** *Boll. d'Ocul.*, 1938, v. 17, Nov., pp. 898-918.

A girl of 14 years had malformations consisting of ectropion of the left lower lid on its nasal side, a scar of the right upper lip resulting from an operation for harelip, and a depression of the region between the nose and left cheek. Her left eye was congenitally amblyopic with opacity of the cornea. The etiology and personal interpretation of the pathogenesis of these malformations are discussed. (Bibliography, 6 figures.)

M. Lombardo.

Csillag, Franz. **Primary infection of the eyelids.** *Klin. M. f. Augenh.*, 1939, v. 102, March, p. 388.

For three months a farmer of 28 years had had a reddish-brown hard swelling at the inner angle of the left lower lid, showing a yellowish secretion which could not be wiped off. Later the corresponding part of the upper lid and the face and neck to the region of the left ear developed the same kind of swelling. The conjunctiva, plica, and canaliculi were thickened and hyperemic. The pre-auricular lymph gland and the mandibular angle were swollen. Wassermann reaction was intensely positive. The affection was relieved by salvarsan treatment.

C. Zimmermann.

Cuesta Yañez, Carlos. **Treatment of blepharitis with bismuth chloride.** *Rev. Oto-Neuro-Oft.*, 1938, v. 13, Nov., p. 273.

A report of five cases of chronic blepharitis treated successfully by the local application of bismuth chloride paste.
Edward P. Burch.

Gifford, S. R. **The Hughes procedure for rebuilding a lower lid.** *Arch. of Ophth.*, 1939, v. 21, March, pp. 447-452.

This procedure (see *Amer. Jour. Ophth.*, 1938, v. 21, Jan., p. 104), which is exceedingly useful for rebuilding all or part of the lower lid when the conjunctiva must be removed, gives results superior to those obtained with pedicled grafts. Three cases are reported illustrating minor complications which may be obviated by a few technical details not mentioned in the Hughes article. There is need for adequate drainage (accomplished by leaving an opening at both the inner and the outer angles), as retained secretion evidently promotes granulation tissue along the suture line. Uniting the layers of the new borders of the lid by sutures is unnecessary and should be omitted as it is likely to cause entropion. When there is loss of skin caused by radiation or cicatricial contraction after other operations, the author suggests that a flap be fashioned according to the Hungarian method so that no skin from the upper lid need be sacrificed, and that the separation of the lids be delayed for one or two months longer than usual so as to minimize the contraction.
J. Hewitt Judd.

Hermans, René. **Blepharochalasis.** *Bull. Soc. Belge d'Ophth.*, 1938, no. 77, p. 155.

A case report of this curious affection of the lids which has been attributed to many causes, including angioneurotic edema, endocrine disease, and tuberculosis. (9 references, 1 plate.)
J. B. Thomas.

Kreiker, A. **Simplified tarsoplasty for cicatricial ectropion.** *Ophthalmologica*, 1939, v. 97, May, p. 69.

The author describes an operation which modifies Blascovics' operation in such a way as to simplify the procedure and to make a satisfactory result more certain. Of utmost importance is the insertion of three sutures through the skin to evert the lid. An incision is made through conjunctiva and tarsus parallel to the lid edge, 2.5 mm. from it (just through the typical scar in the sulcus subtarsalis), through the entire length and thickness of the tarsus, and at a right angle to its surface. Three sutures are then placed through the distal and proximal positions of the tarsus in such a manner as to tip the lid edge forward after the sutures have been tied. A double-armed suture enters through the conjunctiva behind the proximal portion of the tarsus and emerges at its free edge. At this point in the operation, the skin over the distal portion of tarsus is undermined from behind to free the connections between the tarsus and the skin muscle plate. The sutures then enter the distal portion of the tarsus through its anterior surface and emerge at its posterior surface and through the skin at the free lid margin, where they are tied. These sutures must be placed with the utmost care so that they pass through corresponding points on the two parts of the tarsus. One strives for overcorrection which disappears in time. The writer has never noted permanent overcorrection.

F. Herbert Haessler.

Nicolato, A. **A consideration of certain results in reconstruction of the palpebrae following removal of tumors and extensive injuries.** *Ann. di Ottal.*, 1939, v. 67, Feb., p. 81.

When extensive destruction of the palpebral tissues has occurred the author considers that careful preoperative consideration must be given to the plan of procedure to be followed, as each individual case requires special study. There must be complete understanding between the patient and the physician in order that the ethical, moral, and material results shall be satisfactory. When extensive destruction of tissue is involved, early reparative measures should be taken. The article is extensively illustrated showing results, but the methods employed are not described. (12 plates, 46 figures.) Park Lewis.

Theobald, G. D., and White, C. J. **Radium in the treatment of chalazion.** *Amer. Jour. Ophth.*, 1939, v. 22, July, pp. 750-754.

Tooke, F. T. **A case of aleukemic lymphosis involving the upper lids, with pathologic findings.** *Trans. Amer. Ophth. Soc.*, 1938, v. 36, pp. 268-278.

A case is reported in which the lymphoid tissue of the upper lid was the seat of marked proliferation such as might be seen among the somewhat immature forms of lymphatic leukemia. The condition responded to radiation therapy. The author emphasizes the difficulty in classification of these types of tumors and believes that no exact classification is possible. He feels that many of these conditions, even though unlike clinically, form an interrelated series with no sharp lines of separation but a gradual transition from one into the other. David O. Harrington.

Tristaino, L. **Congenital elongation of the inferior lacrimal canaliculus.** *Rassegna Ital. d'Ottal.*, 1939, v. 8, Jan.-Feb., p. 3.

The author describes an example of elongation of the lower canaliculi in a three-year-old child. The condition is congenital and bilateral, and is accompanied by bony changes of the skull, especially a manifest craniofacial defect. There is an increase in the size of the root of the nose, the puncta are displaced temporally, and changes may occur in the caruncle. Frequently one finds epiphora, dacryocystitis, conjunctivitis, and blepharitis. (1 figure.) Eugene M. Blake.

Valerio, Mario. **Surgical treatment of ptosis.** *Rassegna Ital. d'Ottal.*, 1939, v. 8, Jan.-Feb., p. 62.

Valerio believes that the operation of Nida is probably the best procedure for most cases of ptosis. This operation consists in freeing the superior rectus, dissecting a narrow strip from the upper edge of the superior tarsus (left attached at the nasal end), and passing the strip of tarsus beneath the elevated superior rectus. The temporal end of the strip is then reunited to the tarsus, forming a sort of pulling attachment between the superior rectus and the upper lid. The author reports six cases satisfactorily treated by this method. (10 figures.)

Eugene M. Blake.

15

TUMORS

Argaud, R., and Calmettes, L. **Remarks on certain specific anatomic-pathologic characteristics of mixed tumors of the lacrimal gland.** *Arch. d'Opht. etc.*, 1939, v. 3, May, p. 395.

Mixed tumors of the lacrimal and

salivary glands resemble one another very closely. The differential characteristics of these tumors spring from a double modality, histologic and histogenic. The hypothesis is advanced that mixed tumor of the lacrimal gland is the result of a delayed and disordered evolution of one of the embryologic buds, which has remained in a latent state, possessing the tissulogenous omnipotence of embryonic ectoderm. (Illustration.)

Derrick Vail.

✓Castrén, H., and Teräskeli, H. **A rhabdomyoma of the upper eyelid.** Klin. M. f. Augenh., 1939, v. 102, March, p. 372.

A slowly growing tumor in the right upper eyelid of a boy of three years was removed surgically. The tumor recurred and in spite of radical exenteration of the orbit followed by roentgen and radium radiation, grew again and caused death. Histologically the primary tumor was multicellular and polymorphous containing cells like striated muscle fibers. The relapsed tumor was multicellular, very polymorphous like a sarcoma, and the cells showed no transverse striations.

C. Zimmermann.

David, M., Halbron, P., Bregeat, P., and Askenasay, H. **The gliomas of the chiasm.** Arch. d'Opht. etc., 1939, v. 3, May, p. 411.

This excellent review of the subject comprises an analysis of the ocular symptoms (visual disturbance, field defects, and primary optic atrophy) and the extraocular symptoms (hypothalamic, intracranial hypertension). The radiologic signs are important and may show a gourd-like excavation of the sella and enlargement of the optic foramina. The evolution, pathologic anatomy, and differential diagnosis are

adequately discussed. Surgical treatment, except in complete blindness, should not be used. Better results are obtained with X-ray treatment. (Illustrations, bibliography.)

Derrick Vail.

Ellett, E. C. (a) **Leiomyoma and (b) hematoma of the iris.** Arch. of Ophth., 1939, v. 21, March, pp. 497-504; also Trans. Amer. Ophth. Soc., 1938, v. 35, p. 98.

The first of these rare conditions occurred in a man aged 47 years, and resembled a sarcoma. The hematoma of the iris was found in a man aged 53 years, and was removed by iridectomy. The absence of a definite cyst wall suggests that the cyst was formed by closure of one or more of the crypts of the iris. (One color plate, photomicrographs.)

J. Hewitt Judd.

François, Jules. **A case of melanoma of the choroid of atypical development.** Bull. Soc. Belge d'Opht., 1938, no. 77, p. 180.

Two photomicrographs illustrate the text.

Kreibig, Wilhelm. **Traumatic origin of sarcomas of the choroid.** Klin. M. f. Augenh., 1939, v. 102, March, p. 333. (See Section 16, Injuries.)

McCool, J. L. **Mixed-cell tumor of the lacrimal sac.** Amer. Jour. Ophth., 1939, v. 22, July, pp. 734-743; also Trans. Amer. Ophth. Soc., 1938, v. 36, p. 54.

Satanowsky, P., and Cramer, E. **Another case of dyctioma of the ciliary body.** Arch. de Oft. de Buenos Aires, 1938, v. 13, Oct., p. 523.

A case of dyctioma of the pars plana of the ciliary body in a six-year-old

child is reported with histopathologic description of the tumor mass.

Edward P. Burch.

Stieren, Edward. **The intranasal approach for removal of certain orbital tumors.** *Pennsylvania Med. Jour.*, 1938, v. 41, July, p. 892.

The author reports a case of orbital osteoma arising from the ethmoid cells. After removal of the middle turbinate and the ethmoid cells, an opening was made from the nose into the orbit. However, the tumor was found to be too hard and too large to pass through this aperture, so the external route of removal was employed.

George A. Filmer.

* Thiago, C. S. **Telangiectasic granuloma of the eyelids. Botryomycoma.** *Trabalhos do Primeiro Cong. Brasileiro de Ophth.*, 1936, v. 2, pp. 411-412.

Report of pediculated growth 15 by 15 mm. attached to the edge of both the upper and lower lids of the right eye near the canthus. The tumor seemed to spring from the margin of an angiomaticous nevus, extending through the right side of the nose. It bled easily and had been growing steadily since the onset two months previously. Excision was performed with the galvanocautery. The growth began to recur four days later, necessitating the application of radium, which effected a permanent cure. Microscopic study revealed the excised tissue to be a telangiectasic granuloma with secondary fibrinopurulent inflammation. Differential diagnosis is briefly discussed.

Ramon Castroviejo.

Weiterschau, J. **Radiation treatment of glioma retinae.** *Klin. M. f. Augenh.*, 1939, v. 102, March, p. 359.

In the so-far-published fourteen

cases, cure of glioma can be attributed to irradiation therapy only with some probability. Spontaneous cures have been observed, and on the other hand the quantities of radiation used in different cases vary so greatly that uniform appreciation is impossible. Glioma patients show a far better prognosis as to life after enucleation than after treatment with irradiation. Operation in each case is absolutely necessary and should be performed as early as possible. Milder radiation therapy is only an unnecessary loss of time; its result is generally a blind phthisical eye which on account of painful secondary glaucoma has still to be removed. The author's own case of bilateral glioma in a child of two years, the clinical history of which is presented in detail, shows that in such eyes, shrunk after most intense radiation and electro-coagulation, tumor masses can still be found (metastases). These experiences make enucleation of the affected eye in unilateral glioma imperative. In bilateral glioma, irradiation of the second eye after enucleation of the more severely diseased eye is so far an unsatisfactory procedure.

C. Zimmermann.

16

INJURIES

Baekeland, W. **Reaction of the pigment epithelium in perforations of the eyeball.** *Bull. Soc. Belge d'Opht.*, 1938, no. 77, p. 13.

The treatment of detachment of the retina has given impetus to the study of experimental adhesive choroiditis. The author has conducted experiments on rabbits in which the choroiditis was induced by suture. He noted that mitoses in the pigment layer did not begin before the fourth or fifth day,

when the wound of the globe was already closed and the ocular tissues had begun to quiet down. (4 photomicrographs.)
J. B. Thomas.

Fontana, Giuseppe. **Tissue reaction to metal in the globe.** *Rassegna Ital d'Ottal.*, 1938, v. 7, Nov.-Dec., p. 695.

Fontana introduced chips and filings of bronze and of aluminum into the anterior chamber and vitreous of rabbits. He finds that the ocular tissues react to the presence of salts of copper by exudation, leucocytosis, and phagocytosis, tending towards the expulsion of the foreign body. On the other hand, the rabbit eye is very tolerant of particles of aluminum, both clinically and histologically. (7 figures.)

Eugene M. Blake.

Kreibig, Wilhelm. **Traumatic origin of sarcomas of the choroid.** *Klin. M. f. Augenh.*, 1939, v. 102, March, p. 333.

Seven cases (two in the adnexa and five intraocular) are reported. To accept a causal relation between trauma and tumor it must be shown that definite trauma has occurred, that a primary lesion of tissue is present, and that there has been no previous pathologic change at the place of injury. Changes, not only at the place of lesion, but of the entire uveal tissue, may be the basis for the formation of tumors. A long latent period speaks for an etiologic connection more than a brief one, if tissue changes have taken place. Disposition to formation of tumors and familial factors are discussed.

C. Zimmermann.

Pether, G. C. **Treatment of lime in the eye.** *Brit. Med. Jour.*, 1939, April 1, pp. 668-670.

The power of various neutral solutions to dissolve lime was calculated

by experiment. It was shown that ammonium chloride was more effective than any solutions which have hitherto been generally employed. It was tried in 4-percent solution on a series of cases, with considerable success. Preliminary application of an analgesic solution, and mechanical removal of large particles, should also be included in first-aid treatment.

T. E. Sanders.

Scheyhing, Hans. **Localization of a piece of iron firmly embedded in the retina by catholysis (Vogt), and following diascleral extraction with hand magnet.** *Klin. M. f. Augenh.*, 1939, v. 102, April, p. 540.

This illustrates the possibility of exact localization of an intraocular foreign body by catholysis.

C. Zimmermann.

Sjögren, Henrick. **A contribution to our knowledge of the ocular changes induced by sulphuretted hydrogen.** *Acta Ophth.*, 1939, v. 17, pt. 2, p. 166.

A review of the literature and a report of two cases of keratitis in paper-mill workers. With photophobia, lacrimation, conjunctival congestion, and pain the unique feature of the cases was a rapid drying of the cornea on keeping the lids apart. The cornea became uneven in appearance and the pain intense; a blinking movement sufficed to render the cornea even again. The cornea did not stain with fluorescein, but did stain with rose bengal. Recovery was spontaneous in a few days.

Ray K. Daily.

Taliercio, A. **X-ray cataract.** *Ann. di Ottal.*, 1939, v. 67, Feb., p. 104.

The author irradiated one eye in each of several rabbits and obtained lenticular opacities from 38 to 110 days

after the irradiation depending upon the duration of exposure to the rays. The following changes were noted from the beginning of the irradiation: modification of the pH of the aqueous, with displacement toward the alkaline zone; increase in the weight of the lens from 4 percent to 8 percent; small but measurable increase in the calcium content of the lens; and diminution of the anaerobic glycolysis of the cortical substance.

The author concludes that lenticular opacities caused by roentgen rays are neither directly nor indirectly the result of chemical endocular changes, but rather are caused by action of the rays on the elements of the capsular epithelium which generate the lens fibers. (Bibliography.) Park Lewis.

Wibo. **The hygiene of swimming pools; ocular ulceration of chemical origin.** Bull. Soc. Belge d'Opht., 1938, no. 77, p. 183.

The report concerns a case of acute inflammation of one eye, beginning with sudden pain while in a swimming pool and developing into a severe and extensive ulceration of the lower lid and bulbar conjunctiva. The author believes that this local cauterization was caused by a crystal of hypochlorite introduced into the pool in the Javel solution used as a disinfectant. He suggests that all disinfecting solutions be carefully filtered before mixing them with the water of the pool.

J. B. Thomas.

17

SYSTEMIC DISEASES AND PARASITES

François, Jules. **Ocular manifestations in a case of myeloid leukemia.** Bull. Soc. Belge d'Opht., 1938, no. 77, p. 47.

The patient, a woman 53 years old,

had first manifested symptoms of leukemia about 1½ years previous to consulting the author concerning poor vision. Examination of the eyegrounds revealed a profuse hemorrhage into the vitreous of the right eye; in the left eye the veins were dark and dilated, the arteries tortuous but no paler than normal. The patient presented none of the characteristics of the retinopathy of leukemia. The aspect of the fundus of the left eye resembled closely that of erythremia, the disease of Vaquez. Only a blood analysis could differentiate them. (Illustration.)

J. B. Thomas.

Gekker, I. P. **The pathology of the eye in pregnancy.** Viestnik Opht., 1939, v. 14, pt. 4, p. 60.

Reports of three cases: One, a case of acute conjunctivitis simulating diphtheric conjunctivitis with severe corneal ulcers in a woman in the sixth month of pregnancy; simultaneously, two other members of the family were affected with a conjunctivitis which ran the usual course. A case of angiospasm in a pregnant woman with cardiovascular disturbances, and a case of hysterical blindness, are the other two reported. Diseases of the retina and optic nerve are apt to recur with each pregnancy.

Ray K. Daily.

Gonçalves, Paiva. **Malarial trigeminalgia.** Trabalhos do Primeiro Cong. Brasileiro de Opht., 1936, v. 2, p. 513.

Report of a case of severe pains along the territory innervated by the trigeminus. Complete examination revealed the patient to be affected with malaria. Specific treatment of the malaria cured the neuralgia, proving the specific cause of the affection.

Ramon Castroviejo.

Jeandelize, P., Bretagne, P., Druesne, and Thomas, C. **Retinal periphlebitis with hemorrhages and endocrine disturbances.** Bull. Soc. Belge d'Opht., 1938, no. 77, p. 40. (See Section 10, Retina and vitreous.)

Kuhn, H. S. **Adrenal neuroblastoma and its ocular symptoms.** Amer. Jour. Opth., 1939, v. 22, June, pp. 642-648.

Mangabeira-Albernaz, Paulo. **The syndrome of Charlin (syndrome of the nasal nerve).** Arch d'Opht. etc., 1939, v. 3, May, p. 398.

Irritation of the nasal nerve produces a group of ocular and nasal symptoms which Charlin first described. The syndrome is made up of three parts: (1) an inflammatory process of the anterior segment of the eye, (2) very pronounced ocular and orbital pain, and (3) rhinorrhea. The anatomy of the nasal nerve is described and the symptoms analyzed. Ocular manifestations of nasal-nerve irritation are keratitis, iritis, pseudopurulent conjunctivitis, and corneal ulcer with or without hypopyon. The principal characteristic of the pain is that it is quite out of proportion to the ocular findings. It may make the patient consider suicide. The pain is characteristically located in the bridge of the nose and radiates to the eye. It suddenly stops on anesthetizing the anterior part of the nasal fossa. The author advises repeated applications of anesthetic solutions to this area, removal of infected foci, treatment of whatever general condition may be found, and sinus therapy. (Bibliography.)

Derrick Vail.

Meyer, J. M., and Okner, H. B. **Dysostosis multiplex with special refer-**

ence to ocular findings. Amer. Jour. Opth., 1939, v. 22, July, pp. 713-722.

Mueller, Friedrich. **Menotoxins in ophthalmic diseases.** Trabalhos do Primeiro Cong. Brasileiro de Opth., 1936, v. 2, pp. 426-428.

The author quotes Aschner, who believes that many ophthalmic diseases are produced by menotoxins. According to Aschner, substances produced monthly by the female organism to prepare for fecundation of the ovum give rise to catabolic substances that have to be eliminated at the menstrual period. The author believes conservative treatment should be instituted in gynecological conditions, to preserve those organs which play such an important role in maintaining the equilibrium in the female organs.

Ramon Castroviejo.

Mueller, Friedrich. **Relations between monocular affections and internal diseases.** Trabalhos do Primeiro Cong. Brasileiro de Opth., 1936, v. 2, pp. 417-418.

Mueller believes that when only one eye is affected in cases of systemic diseases, it must be because the eye is predisposed to disease. He mentions the case of a chemist with albuminuric retinitis in only one eye, which apparently was the one used for microscopic observation. Similar cases are mentioned in glaucomatous patients.

Ramon Castroviejo.

Németh, Lajos. **Hypersensitivity reactions of the eye.** Orvosi Hetilap, 1939, v. 83, May, p. 514.

The author enumerates various ocular diseases in which allergy might be accepted as the etiologic factor. The therapy consists of eliminating the sensitive agent, of desensitization, or of

symptomatic treatment. The author warns against performing any operation during the allergic state.

R. Grunfeld.

Pergola, Alfredo. **Oriental button in the prelacrimal region.** *Rassegna Ital. d'Ottal.*, 1939, v. 8, Jan.-Feb., p. 33.

The patient described was a forty-year-old soldier who presented a typical oriental button in the skin over the lacrimal sac on the left side. This situation is most rare and various other possibilities were considered, but the bacteriologic study showed the classical parasite of tropical Leishmaniasis. (2 figures.)

Eugene M. Blake.

Potvin. **Cholesteremia and its ocular manifestations.** *Bull. Soc. Belge d'Opht.*, 1939, no. 77, p. 160.

Hypercholesteremia can be attributed not to hepatic insufficiency, but rather to a process of defense of the organism against biliary intoxication. On the other hand, in grave infections such as cancer or tuberculosis the percentage of cholesterol is low. There seems to be a constant relation between the gravity of the infection and the amount of cholesteremia. The author presented a study on the metabolism of cholesterol in 1936 (see *Amer. Jour. Ophth.*, 1937, v. 20, p. 866). He states that recent clinical and laboratory observations confirm the corneal manifestations of hypercholesteremia described in that study. Among these manifestations, corneal anesthesia or hypesthesia are not due to intoxication of the ciliary ganglion but to mechanical blocking by deposits of cholesterol at the corneal margin, where the return circulation is slow. One would expect to find the same manifestations in other regions of the eye, such as the

episclera, the iris, and the retina, and wherever the nutrition of the eye is complex and unsettled. The author has observed several cases of typical episcleritis in patients of the neuro-arthritic group. Cholesterol is a vascular toxin and particularly a toxin to the veins. Hence one finds important changes of the retina in cases of chronic cholesteremia, such as capillary and venous thromboses. Alkalosis favors the dissolution, acidosis the precipitation of cholesterol in the serum. It would seem that cholesterol and histamine carried by the blood stream play an extremely early role in the endovascular changes that give rise to sclerosis. (17 references.)

J. B. Thomas.

Van Duyse and Van Canneyt. **Results obtained by injection of an emulsion of tubercle bacilli into the retro-ocular cavity of the rabbit.** *Bull. Soc. Belge d'Opht.*, 1938, no. 77, p. 174.

By injecting an emulsion of *treponema pallida* into the retro-ocular cavity of the rabbit, the authors were able to provoke specific manifestations affecting primarily the anterior segment of the eye (especially the cornea), and secondarily the iris and ciliary body. The conjunctiva and deep membranes remained uninjured. These observations led the authors to repeat the experiment, using tubercle bacilli. Human tubercle bacilli in doses of 3 mg. caused granulomas which became necrotic. Bovine tubercle bacilli in doses of 1 mg. provoked lesions of different parts of the globe and its adnexa with the exception of the winking membrane. The infection spread slowly from the retrobulbar tissues, involving all tissues of the globe and finally the lids and skin. (Illustrations.)

J. B. Thomas.

18

HYGIENE, SOCIOLOGY, EDUCATION,
AND HISTORY

Bistis, J. **Statistical remarks on blindness in Greece.** *Ophthalmologica*, 1939, v. 97, May, p. 90.

In Greece, with a population of 6,500,000, one person per thousand is blind. Of 373 persons practically blind (that is, inability to count fingers at more than one meter), 6.5 percent were blind from trachoma, more than 13 percent from optic atrophy, and 16 percent from glaucoma. F. Herbert Haessler.

Hamilton, J. B., and Councell, W. P. **Cause and prevention of blindness in Tasmania.** *Med. Jour. Australia*, 1939, v. 1, March 18, pp. 430-433.

This review of blindness in Tasmania is a supplement to a report made eighteen months previously. It analyzes the causes of blindness in Tasmania, and gives several recommendations for reduction of the number of blind individuals. T. E. Sanders.

Harman, N. B. **The work of the National Ophthalmic Treatment Board.** *Brit. Med. Jour. Supplement*, 1939, Feb. 25, pp. 85-87.

The organization and activities of the National Ophthalmic Treatment Board, which provides a means whereby persons of limited income can obtain proper medical advice and efficient spectacles at a cost within their reach, are reviewed and discussed. (See also editorial, *Amer. Jour. Ophth.*, 1939, v. 22, p. 677.) T. E. Sanders.

Jimenez, J. V. **Trachoma in the province of Corrientes and national territory of the Chaco.** (A report presented to the National Department of Health

of the Republic of Argentina.) *La Semana Med.*, 1939, v. 46, May 11, pp. 1050-1060.

In Corrientes more than 4.91 percent of the population were found to present actual trachoma or a condition suspected to be trachoma. In the national territory of the Chaco, 12.95 percent were thus classified. W. H. Crisp.

Kirwan, E. O'G. **Early ophthalmologists in Calcutta.** *Indian Med. Gazette*, 1938, v. 73, July, p. 423. (See *Amer. Jour. Ophth.*, 1938, v. 21, May, p. 601.)

Lebensohn, J. E. **Louis Émile Javal, 1839-1907; a centenary tribute.** *Arch. of Ophth.*, 1939, v. 21, April, pp. 650-661.

This biography reviews the training and achievements of the French ophthalmologist, whose early interest in optics and orthoptics was stimulated by defects of his father's and sister's eyes. He invented an optometer and clinical ophthalmometer and discovered the character of ocular movements as a by-product of his research in orthoptics. After he became blind from glaucoma, he invented a writing rack and published in vivid detail his observations on his own case of glaucoma. J. Hewitt Judd.

Maggiore, Luigi. **In memory of Giuseppe Cirincione.** *Ann. di Ottal.*, 1939, v. 67, March, pp. 161-178.

An "in memoriam" ten years after the death of the founder of the journal. He was also Professor of Ophthalmology at the University of Rome, and a close personal friend of Gabriele D'Annunzio. He was subjected to bitter attacks within the profession, and apparently played a losing part in Italian political disputes during the later years of his life.

Manolesco, D. **Organization of the struggle against trachoma in Rumania.** Bull. Acad. de Méd. de Roumanie, 1939, v. 7, no. 1, p. 42.

An extensive discussion of antitrachomatous activities in Rumania. Methods of treatment and control of the disease in schools, factories, prisons, asylums, hospitals, and army, as well as in family groups, are discussed in detail.

George A. Filmer.

Mueller, Friedrich. **Constitutional treatment of ophthalmic diseases.** Tra-

balhos do Primeiro Cong. Brasileiro de Ophth., 1936, v. 2, pp. 417-418.

The author emphasizes the importance of considering the organism as a whole in treating affections of the eyes, indicating that the eye is but a small part of the whole organism. To add strength to his arguments, he quotes paragraphs from works of Hippocrates and Aschner. Ramon Castroviejo.

Waugh, D. D. **Ophthalmological requirements for employment, 1939.** Amer. Jour. Ophth., 1939, v. 22, June, pp. 665-667.

NEWS ITEMS

Edited by DR. H. ROMMEL HILDRETH
640 S. Kingshighway, Saint Louis

News items should reach the Editor by the twelfth of the month

DEATHS

Dr. Charles Louis Billard, Washington, D.C., died May 1, 1939, aged 60 years.

Dr. Myron Ellis Kahn, Chicago, Illinois, died May 25, 1939, aged 47 years.

MISCELLANEOUS

The New York Post Graduate Medical School and Hospital (Columbia University) has arranged an informal dinner reunion for former matriculates in the eye seminar, former residents, and members of the hospital staff, to be held on October 10th at the Palmer House, Chicago. Dr. James W. Smith, 1016 Fifth Avenue, New York City, is in charge of reservations.

The establishment of a course in Fundamental Sciences in Ophthalmology at the Har-

vard Medical School as a prerequisite to advanced courses has been found of value not only to the practicing ophthalmologist who feels inadequately prepared in basic fundamentals but it introduces the beginner into ophthalmology in the proper manner so that he is fully aware of the broad scope of ophthalmology and the futility of inadequate preparation. On the basis of the experience of the past two years, since the fundamental course was introduced, the entire schedule for all courses is arranged so that the course in fundamentals can be followed by clinical courses in proper sequence, giving a full academic year of study. This year the fundamental course is given from October 16th to December 23d. It is followed in January by courses in Neuro-ophthalmology and Perimetry and Ocular muscles, the latter being conducted by Dr. Bielschowsky.

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